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ORIGINAL CONTRIBUTIONS

VARIOUS FRACTURES

PRACTICAL NOTES ON THEIR TREATMENT*

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SPOKANE, WASH.

The time has come when one of the most convenient traditions connected with the treatment of fractures should be set aside. I say "should be" because its very convenience will undoubtedly keep it going for some time yet. This is the tradition that reduction of fractures must be postponed until the swelling has gone down. The only possible reasons for postponing the reduction of a fracture are that, first, reduction would be easier or could be done better later on, and that, second, healing or union would be more prompt, following the delayed reduction.

These things are not true, however, since reduction becomes more difficult as every hour and every day goes by, and since prompt union is delayed by every hour and every day that passes. The stage of healing follows at once after the injury. Organization of the clot surrounding the bone into connective tissue occurs rapidly. Deposition of lime salts has been observed as early as the third or fourth day following fracture. These interfere with reduction and the interference becomes greater and not less as time goes on. This initial effort of healing of the soft tissues and the initial formation of bone are lost, if reduction is delayed.

Swelling is relieved much more promptly by reduction and immobilization than by waiting. I have never heard of any logical reason for waiting until the swelling has gone down. This applies, of course, to closed reductions and not to open operations, where the introduction of infection from without becomes a factor to be considered. It does apply, however, to compound as well as to simple fractures.

TREATMENT OF COMPOUND FRACTURES

In attempting to formulate a definite policy in connection with the treatment of compound fractures, many difficulties are presented in a study of the literature and in checking over personal cases. Out of the mixture, however, of different opinions, and happy and unhappy personal results, I believe that a fairly reasonable line of procedure can be suggested. In order to avoid confusion it is best to think about the treatment of the wound and the treatment of the fracture separately.

First, let us consider the treatment of the fracture, since there seems to be less real difference of opinion about it. There is general agreement that immediate reduction of the fracture should be done, and that firm fixation should be established. I think we should accept this opinion, and see to it that reduction and immobilization in compound fractures are not postponed.

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* Read before the Thirty-fourth Annual Meeting of Idaho State Medical Association, Sandpoint, Ida., Sept. 2-4, 1926.

They should not be left lying on pillows or between sand bags or in a fracture box, while we are waiting for healing to take place or for infection to develop in the wound. The differences of opinion which arise in connection with this subject arise only as to the particular method to be used for reduction and immobilization. As I read the literature, it seems to me that the personal enthusiasm of some men for this or that method causes them to urge this one method to the exclusion of others, whereas a consideration of several methods would show each to be valuable under different circumstances.

In the main, there are three methods to be considered. First, reduction by manipulation, with immobilization in splints or plaster cast; second, extension or traction with adhesive on the skin, or with a pin or tongs in the bone itself; third, direct fixation of the fracture with wire, band, or plate and screws. These are the methods between which we must choose, when deciding upon the treatment of a simple fracture. The open wound in the compound fracture, with its possibility of infection and its traumatized tissue, should lead us to make a more careful selection of method than is necessary with the simple fracture. It seems to me, under these circumstances, that the method which will open up the fewest new avenues for infection, and which will least traumatize the already damaged tissue, is the method of choice.

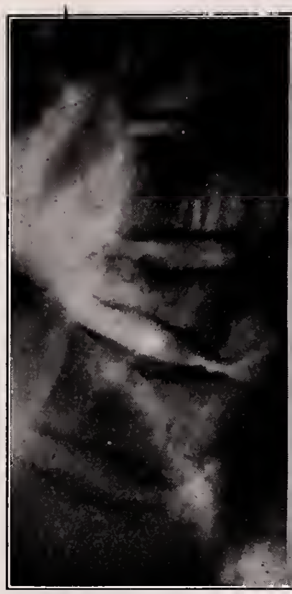
It would follow, then, that reduction by gentle manipulation, if possible, and fixation in splints or casts would be advisable. My next choice would be traction with adhesive on the skin, if that method offered a fairly certain reduction of the fracture. If not, the caliper or pin should be made use of to reduce the fracture immediately, if possible, and to help hold it in position, or, if immediate complete reduction were not possible, to furnish means for a gradual reduction.

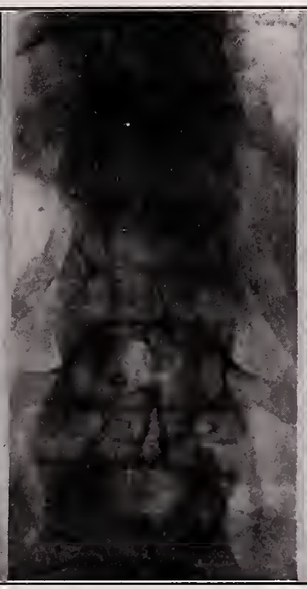
If it is judged that reduction cannot be secured and maintained by the methods just mentioned, then we have only the method of direct fixation with wire, band or plate to consider. Certain men are advocating this method for all compound fractures. It seems to be an extreme view, and one which should not be adopted generally. If the more conservative methods are thoroughly carried out, we will have very few cases in which it is necessary to decide whether or not we should wire, band or plate the fracture. In deciding whether or not we should use this last method, we will have to decide whether we would rather take a chance on having healing of the wound occur with nonunion or malunion, or whether it is wiser to have a better chance for union, with an increased risk of an osteomyelitis.

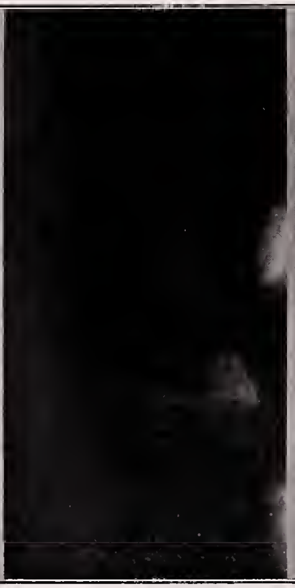
Turning, now, to the matter of what to do with the wound, I find it most difficult to make a definite statement. I feel certain only as to one thing, that, no matter what method we may follow, we will be sorry that we have followed it in some cases. The difficulty, of course, lies in the fact that we cannot judge accurately from the examination of the wound to just what degree it has been contaminated. I have had a gas bacillus infection which resulted in the death of the patient develop in a case of oblique fracture of the femur, in which one sharp point of the femur produced a small puncture in the skin, which was treated conservatively with the ordinary application of dressings. I have had primary healing occur in cases of large, jagged, grossly dirty wounds, which I have treated by immediate, tight suture. It seems to me that our knowledge of the development of infection is still quite superficial, and that until it is more profound we can expect to make many mistakes in the treatment of these wounds.

There are, however, at present only so many ways in which we can handle these wounds, and it is worth while to consider each one. We can let the wound alone, simply wiping off the skin around it, and the superficial areas with the ordinary cleansers or antiseptics. We can clean out the entire wound, down into its various pockets, with ether or other cleansers, and cover the entire wound surface with iodine or other antiseptic. Lastly, we consider cleaning out the entire wound with a knife and scissors, the surgical debridement of the war. Following any one of the methods, we can leave the wound entirely open, we can partially close it, or we can completely close it. If we leave it open, we can simply cover it over with dressings of various nature, we can pack it with various substances or antiseptics, or we can leave tubes in the wound for its irrigation or filling of the wound with Dakin's solution or other antiseptics.

Certainly, the most desirable method is that of immediate, complete suture, if it will give us primary healing. There is no doubt at all that this method is successful in many, many cases. I believe, however, that in those cases where virulent septic agents have been introduced into the wound, such, for instance, as the gas bacilli, we have added considerably to the chance of serious trouble by the complete suturing of the wound. Leaving the wound wide open is the least desirable method from the standpoint of securing early healing, and the pre-







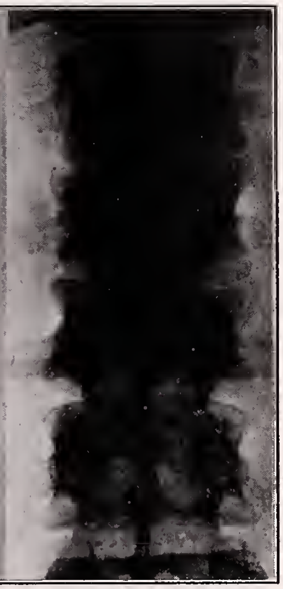


Fig. 1. Lateral view of typical compression fracture of vertebra.

Fig. 2. Anteroposterior view of same case as fig. 1, showing absence of sufficient signs of injury to make a diagnosis of the condition shown in fig. 1.

Fig. 3. Lateral view, showing mild compression of a vertebra, causing chronic pain and weakness.

Fig. 4. Anteroposterior view of the same case as fig. 3, showing the usual lack of evidence of compression when this view only is made.

vention of further infection from without. In those cases, however, where the wound has been contaminated with virulent organisms, it certainly is a desirable thing to have it wide open.

It does not seem right, however, that we should deprive many wounds of the privilege of healing by primary intention, by which many will certainly heal, in order to minimize the development of severe infection in a certain number. I can see no way out of this puzzle except through some sort of compromise method, a method which will give us some of the advantages of primary suture and some of the advantages of a wide open wound. Such a method is one well described by Stern, of Cleveland, and in brief is as follows:

The surgeon is gowned, masked, and gloved as though for a major operation. The limb, which has been shaved, is thoroughly cleansed with ether, the skin and wound are painted with ordinary tincture of iodine, followed by alcohol, and then draped in sterile sheets. With a small sterile sponge on a hemostat, ether and tincture of iodine are carried to all parts of the wound, and the excess of iodine removed with alcohol. Protruding ends of bones are thoroughly cleansed with iodine, alcohol and ether. The fracture is then reduced, and if necessary to get reduction, the wound is enlarged somewhat. The wound is then only partially closed, loosely closed with a few sutures, so that spaces are left between the sutures for escape of wound secretions. Sterile dressings are applied. Such a wound can heal fairly rapidly, and severe infection is less likely to occur, and if it does develop can be drained easily. Lest, in the discussion of the treatment of the wound, we have for a moment forgotten the bone, let us remember that, whether primary healing or infection follows, the end result depends very largely upon an immediate good reduction and a firm fixation of the fractured bone.

COMPRESSION FRACTURES OF THE VERTEBRAE

A new group of fractures which is making a great deal of trouble these days is the compression fracture of the spine. I see it mostly in working men, but also a considerable number in women, where the injury has forced the two ends of the spine together, causing it to bow backwards. The damage is usually done in the lower dorsal and upper lumbar regions. I have seen some of these cases early but the largest number late, where a chronic disability with pain and weakness in the back is present months or even years following the injury.

It is my feeling that the chronic disability seen in so many of these patients is due, to a large extent, to inefficient and too early discontinued treatment of the condition immediately following the injury. This is due, first, to the fact that many of them are unrecognized until weeks or months have gone by, and also to the fact that treatment has not been thoroughly explained or

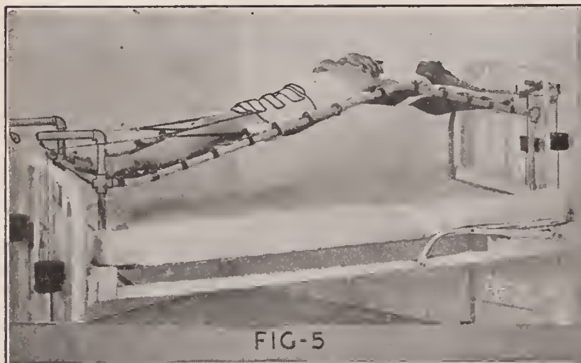


FIG-5

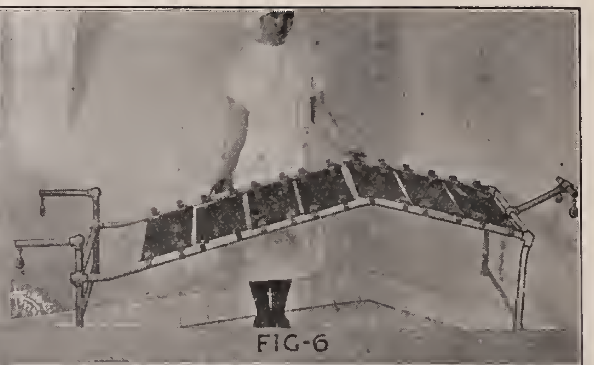


FIG-6

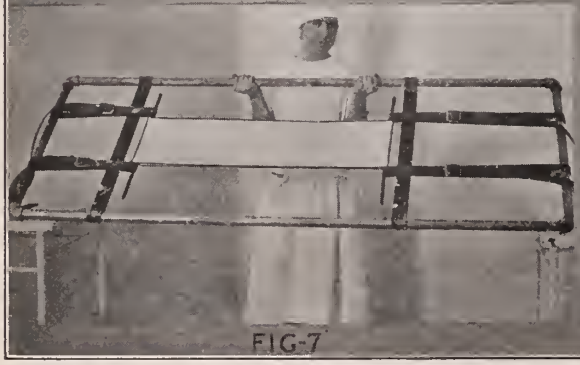


FIG-7

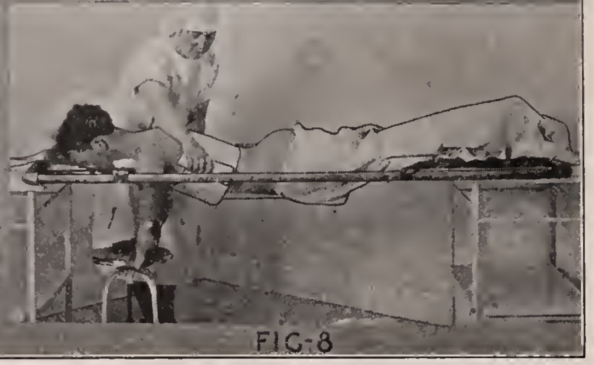


FIG-8

Fig. 5. The Langworthy "Hyperextension and Traction Frame for the Spine." Weights are applied to the head by a halter, and to the pelvis with a girdle. The frame is complete in itself, and can be placed on any bed. Nothing is attached to the bed.

Fig. 6. Details of the author's "Hyperextension and Traction Frame for the Spine." The patient lies on a series of narrow canvas slings, which can be removed and replaced one at a time, allowing the entire back of the patient to be cared for without disturbing him in any way. Also, by tightening or loosening the slings, the degree of hyperextension of the spine can be increased or decreased. Treatment with this complete apparatus, with the pulleys for the extensions from the head and pelvis permanently attached, is more thoroughly and easily carried out than where a makeshift extension apparatus is attached to the head and foot of the bed. The patient can be carried about on it, placed upon a cot or couch in the home, and treatment continued there.

Fig. 7. A simple and excellent apparatus for the application of body casts, which anyone can easily make. Two iron rods are slipped through the ends of a strip of canvas which is sewed up like a roller towel. Four straps with buckles, placed around the ends of the rods, stretch the canvas to the ends of a rectangular gas-pipe frame. Two pieces of strap iron are placed across the width of the frame underneath the straps, and by moving them toward the middle or towards the ends of the frame, the sagging of the canvas can be regulated. When not in use, the entire frame is stood up flat against the wall, and takes up very little room.

Fig. 8. The Body Cast Frame in use. The canvas has been allowed to sag, so that the spine is in hyperextension, which is the desirable position following a compression fracture. Padding and then the plaster bandages are wrapped around the patient and around the canvas on which he lies. The ends of the frame rest on two tables. The patient's arms are more comfortable with the hands resting on a stool than hanging free. When the plaster is set, the straps are loosened so that the rods can be pulled out from the ends of the canvas. When this is done, the patient, of course, must be supported, and when loose from the frame is placed on his back on a stretcher or bed. The canvas is then pulled out from between the plaster and the patient. The position in which it is desired to immobilize the spine is nicely regulated by this simple apparatus.

standardized. Many of these cases present the symptoms simply of a strained back, and after rest in bed for a week or two begin to get about again, seem to be making satisfactory recovery, and are allowed to resume activity or go back to work. Trouble may begin immediately, or may be delayed for weeks, or in some instances for several months. Pain and weakness in the back become noticeable, and are aggravated by continued activity.

A lateral x-ray of the spine then shows the typical compression, and examination shows slight or marked kyphosis of the spine, with limited movement of the spine in this region. In going back into the history of these cases, we often find that x-ray pictures have been made and have been reported negative, but in practically all of these instances we find that only the anteroposterior view of the spine has been made. Diagnosis in these cases is made almost entirely from the lateral view of the spine, since the anteroposterior view in case after case shows little or nothing to indicate the injury.

In order to make an early diagnosis in these cases, we must remember that it does not take a severe injury to produce fractures. It occurred in a recent woman patient of mine when she slipped on the floor while doing some mild setting up exercises. In view of the great disability produced by these injuries, it is necessary that x-ray pictures of a larger percentage of the back injury cases be made, and that two views of the spine always be made. If we are simply going to make one view, it is much better in all cases of injuries to the spine to make the lateral view.

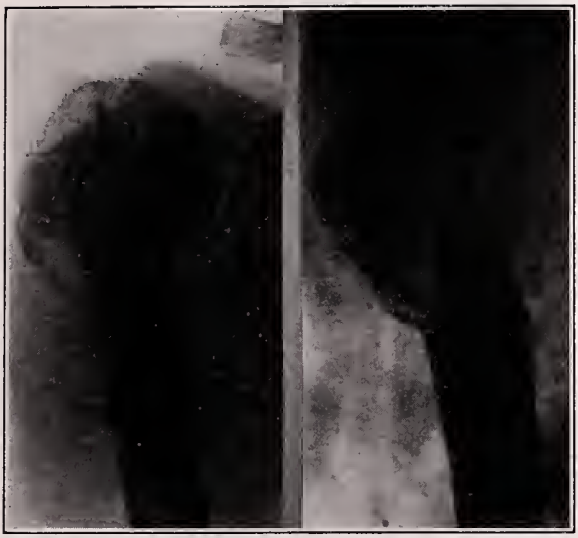


Fig. 9. Fracture of the surgical neck of the humerus, frequently seen in children in my practice.

Fig. 10. Same case as fig. 9, after reduction by method described and immobilization in plaster, in abduction.

Treatment in these cases divides itself into that of the old cases and that for those recognized early. Treatment for the late cases must do something to increase the strength of, and to lessen the strain on the weakened region of the spine. It is not my purpose at this time to discuss the treatment of the late cases, and I will dispose of it by advising an ankylosing operation on the spine for the younger and more vigorous individuals, and a brace for the older patients who do not have many years of activity or work ahead.

I believe we should give special consideration, however, to the treatment of this injury when recognized early. Treatment should follow, it seems to me, as closely as possible the principles to which we adhere in the treatment of other fractures, namely, that the bone should be restored as nearly as possible to its normal shape, and rapid healing should be promoted, the products of irritation diminished by immobilization, and the injured region protected from strain until it is strong enough to stand it. It seems to me that the indications for treatment are best carried out by continuous and gradually increased traction on the spine by weights applied to the head, shoulder and pelvis, with the spine in a hyperextended position, on an apparatus as shown in my pictures or some similar arrangement. This type of treatment, I believe, should be carried out for six or eight weeks, and then the spine protected and held in the hyperextended position in a plaster jacket for several weeks longer, during which time activity can gradually be resumed.

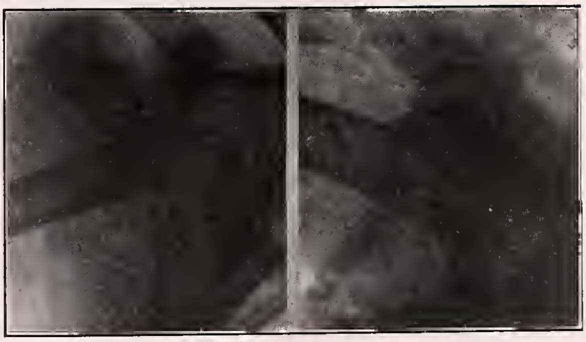


Fig. 11. Typical fracture of surgical neck of the humerus, with the arm in abduction, but the fracture unreduced.

Fig. 12. Same case as fig. 11, after reduction of the fracture by the method described, and with immobilization in plaster cast, with the arm in abduction and external rotation.

The best form of treatment for this particular injury at this time is simply a matter of opinion, since we have no statistics with regard to the success of treatment in this condition on which to base a comparative evaluation of different forms of treatment. It seems entirely reasonable to me, however, to believe that we can greatly improve our results in these cases by making earlier diagnoses, and by following out such a course of treatment as I have just outlined.

FRACTURES OF THE SURGICAL NECK OF THE HUMERUS

Fractures of the surgical neck of the humerus are found difficult to treat so frequently, and are making trouble for the doctor so regularly, that it seems worth while to discuss them briefly. Checking over my experience with this fracture, I find that one way of handling them has been satisfactory in nearly all of the cases. Most of these fractures have been in children, around eight or ten years of age, and the remainder in old people.

The method which I have found to be almost uniformly successful is that of manipulation under general anesthesia, under the fluoroscope, followed by immobilization in a plaster cast, holding the arm in abduction. While manipulating these cases, I find that I gain nothing by pulling on the arm directly. I angulate the two fragments at the site of fracture, then maneuver until any point on the end of the upper fragment is brought in contact with any point on the fractured end of the lower fragment. The pull on the lower fragment, when in the angulated position, sometimes helps to accomplish this.

The angulation of the two fragments is then straightened out, working under the fluoroscope to see that the direction of the lower fragment is

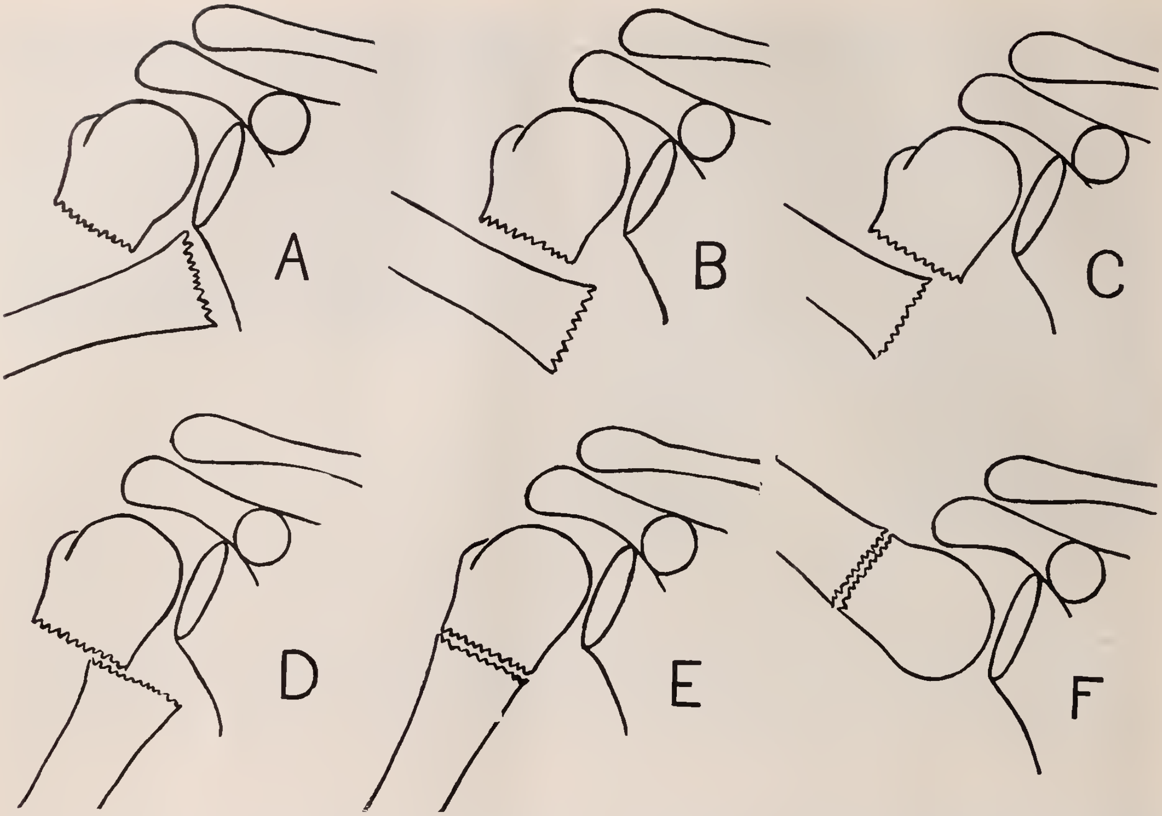


Fig. 13. Diagrams to illustrate the angulation method for reduction of the ordinary fracture of the surgical neck of the humerus. The principle of the method can be carried out no matter what the position of the lower fragment, the manipulation being done in a plane which corresponds to the displacement. All manipulations are carried out under the fluoroscope, with the patient anesthetized.

A. Tracing from x-ray film of fracture of the surgical neck of the humerus.

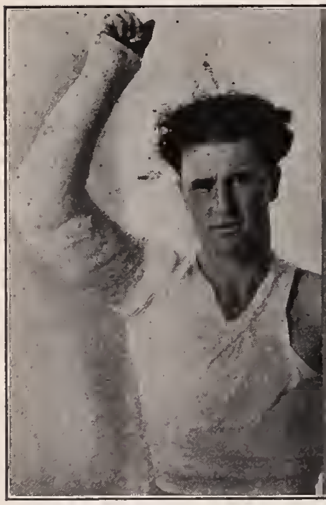
B. Extreme angulation between the two fragments by abducting the lower fragment.

C. Extension of the lower fragment in the angulated position, with the shoulder fixed, until one corner of the lower fragment comes in contact with the fractured surface of the upper fragment.

D. The lower fragment is straightened out, until the direction of the two fragments is parallel.

E. Further approximation of the fragments is made by direct lateral pressure applied to the lower fragment close to the line of fracture.

F. The arm is swung out into as much abduction and external rotation as can be obtained without disturbing the approximation of the two fragments.



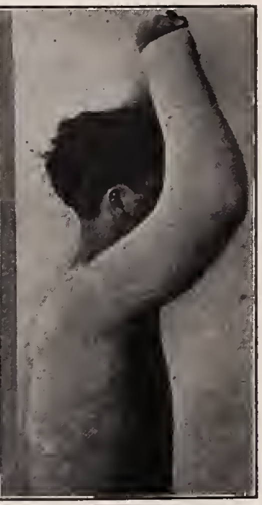


Fig. 14. Plaster cast immobilizing fracture of upper end of humerus in position of abduction and external rotation which guarantees optimum function.

Fig. 15. Side view of the desirable position for immobilization of fractures of the surgical neck of the humerus, showing the arm running somewhat anterior from the shoulder, as well as being abducted and externally rotated.

made parallel with that of the upper fragment. This will nearly always be accomplished with the lower fragment abducted. We have now secured a little, or possibly a good deal of end-to-end apposition. The remainder of the end-to-end apposition is secured by direct, lateral pressure on the lower fragment, close to the site of fracture.

The arm is then immobilized in a plaster cast, which holds the upper extremity in as much abduction and as much external rotation as can be secured without disturbing the fracture itself. Most of these fractures can be held with the arm abducted to at least 90 degrees from the body, and in many of them more abduction is possible. In some of them complete abduction will not disturb the fracture. The more completely the arm can be abducted and externally rotated, the more certain I feel of complete function of the shoulder.

Children are left in this cast for five or six weeks, and upon removal we almost invariably get the arm clear down to the side of the body in a few minutes.

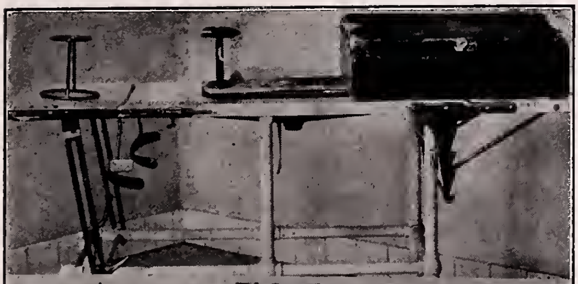


FIG-16

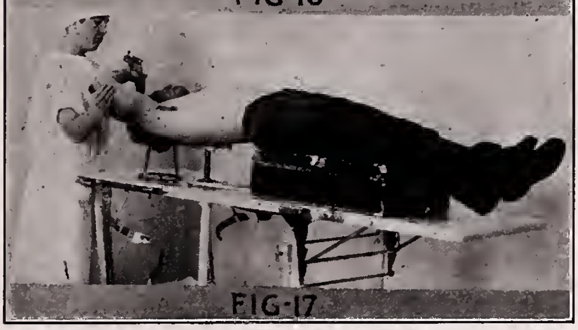


FIG-17

Fig. 16. Application of the abduction plaster cast is facilitated by this simple apparatus. An ordinary box, padded on top, is fitted on the bottom with a board which slides in and out. On the end of this board is an upright carrying a triangular flat piece of metal. The box supports the hips and legs, and the metal rest is placed between the shoulders. Another simple support is furnished for the head. The apparatus is easily made, and is valuable also for hip casts.

Fig. 17. After reduction has been completed on the fluoroscope table, patient is raised vertically without changing the position of the arm, and the box with the shoulder rest and head rest slipped underneath him. The box, shoulder rest and head rest support the patient nicely, while the nurse holds the arm in the desired position. Padding and plaster bandages can now be applied without obstruction. This simple apparatus is much better for this purpose than the regular fracture table.

Complete function of the shoulder can be expected in practically all of the children in three or four weeks. In the adult more attention must be paid to the prevention of stiffening. After about two weeks the upper surface of the plaster cast can be removed from around the elbow and forearm, so that movements of the elbow can be started and stiffness there and in the hand prevented. In about four or five weeks following the reduction in the adult, the cast can be cut away from over the shoulder so that a certain amount of movement in the shoulder joint can be carried out daily, and stiffness there minimized.

When union of the fracture is thought to be permanent in the adult, the cast should be removed and replaced by a metal abduction splint, in which the arm is gradually lowered to the side, being lowered gradually, as the ability to raise the arm off the splint into a good degree of abduction is obtained. I have never had one of these patients fail to get the arm down to the side again, but I have had difficulty in maintaining complete abduction when the arm was allowed to come down to the side too rapidly. There will be a few cases in which this method will not be satisfactory and in them traction or open operation will be necessary. In my own work, however, the exceptions have been few.

TREATMENT OF COMPOUND FRACTURES*

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The treatment of compound fractures is quite complex because of the number of factors involved. When a patient, the victim of one of the dire calamities of our modern industrial life, comes to us, he is apt to be in shock as a result of the tissue trauma and loss of blood. He has a splintered and deformed leg that is difficult to align and even more difficult to hold in place on account of the open sore. The wound itself is of the worst possible character, ragged, large and contaminated, and this involving bone, which is long to heal.

The American College of Surgeons recently appointed a fracture committee, whose purpose it is to standardize treatment and to enlist the aid of all of us in more efficiently handling fractures. It is the opinion of many that our average result in fractures is below what it ought to be. Sixty per cent of all malpractice suits are instituted in fracture cases. The splints that this committee recommends and the record they ask that we keep should be adopted by us all.

Scarcely anything comes to our hospitals more difficult to treat than these cases, especially those that are open. Ingenuity, skill and a thorough knowledge of the accepted methods used elsewhere are necessary, if we are to obtain good functional results. Even so, our end results are frequently such that, when a confrere looks at a case with us, we are chagrined that our armamentarium and ability have not been greater. These injured suffer so greatly, stay with us so long and the progress is so tedious that every virtue a physician possesses he must call forward to the support of the patients and his own morale.

The World War was a great stimulus to the study of these cases, there were so many of them. At the end of the war each nation concentrated its cases. It would be much better if we could do this, but the practice of medicine is now so organized that each of us is called upon to care for the injured close at hand. Especially in this state, where transportation of a patient to a medical center would subject him to further injuries, we must be individually equipped for the work.

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*Read before the Forty-eighth Annual Meeting of Medical Association of Montana, Billings, Mont., July 16-17, 1926.

This paper is based upon the study of 114 cases of open fracture treated in our Eastern District hospital between 1915 and 1925. For lack of time, we will consider only one phase of the subject, the treatment of the open wound. Each patient was handled differently in some respects, no two cases being exactly alike. There are, however, in a general way, six methods of handling these cases (see table I).

TABLE I.
Methods of Treatment
Compound Fractures
114 cases, from 1915 to 1925

	No. Cases	Per Cent
1. Cleansing and antiseptic dressing	31	27
2. Drainage	42	37
3. Debridement and Carrel-Dakin	18	15
4. Debridement and primary suture	6	5
5. Debridement and secondary suture	0	....
6. Amputations	18	16

In order to bring each of these methods more clearly before you, I have selected an illustrative case for each treatment method.

Case 1. P. B., male, age 54, admitted to hospital December 17, 1924. That day while working on a scaffold twenty feet high he fell, landing on his feet. Examination showed an oblique fracture of femur. There was a wound one inch in length on the anterior surface of the thigh, from which blood was oozing, and which had evidently been produced by the fractured femur.

When this patient was admitted, he was immediately taken to the dressing room, his clothes removed and an inspection of his leg was made. Fortunately he came to us in good condition. He had on a Thomas splint and a sterile dressing had been applied. The doctor who applied the splint said the fractured femur was protruding through the wound before he had adjusted it. The traction had already pulled the projecting bone deep under the tissues. An x-ray was taken. The patient was then anesthetized and the whole leg was thoroughly cleaned, soap and water being used away from the wound and carbon tetrachloride near to it. The margin of the wound was painted with dichloramine T and with a dropper it was inserted superficially and without force in the upper part of the wound. A sterile dressing was applied and the leg put up with traction. This man's wound healed primarily. He left the hospital walking, March 10, 1925,

Compound fractures are produced in two ways: First, from within out. Indirect force fractures the bone and the jagged end is projected through the muscles and skin. Second, from without in. The direct force of a missle penetrates to the bone or, as so frequently happens in industrial work, the limb is crushed by a heavy weight, planes being devulsed, tissue being devitalized and jagged ends of bone being forced against muscles, nerves and arteries.

This case was of the first type. The force of the fall came at the end of the bone. The bone fractured and protrusion of the fragment resulted. It is rare for this type of open fracture to occur in the femur. It usually occurs in the tibia, where very little tissue lies over the bone. This method of treatment is limited to this type of fracture. It is only applicable to fractures without splintering of bone and where the wound is small. In other words, these wounds are treated as though they were sterile until the temperature record shows them to be infected. Thirty-one cases, or 27 per cent in this series, were treated by this method. The average length of drainage was 28 days.

Case 2. A. P., male, age 46, admitted July 3, 1925. Patient was injured in a bus wreck. Both radius and ulna were splintered and the elbow joint was disrupted. The wounds were filled with dirt. Liberal incisions were made so that absolutely no discharge could collect anywhere in the traumatized field. The wound was cleaned as in the first case and dichloramine T was applied. It was redressed with aseptic technic, rubber gloves being worn and all dressings handled with forceps. Dichloramine T was applied daily.

This wound healed kindly and the functional result was almost perfect. On account of the extensive soft tissue involvement, no better bone alignment was obtained. Unfortunately, x-ray pictures show only the bones; we are talking about the entire wound.

This case well illustrates the main point I wish to make. If you get adequate, dependent drainage and keep from reinfecting these cases, they will do very well. His wounds were healed in forty-six days. Forty-two cases in this series, or 37 per cent, were treated by this method. The average drainage lasted 110 days.

Case 3. J. M., male aged 68. On December 9, 1924, patient went into a refrigerator car to change charcoal burner. He was overcome by gas. The car was moved and he was picked up forty miles from the station, having fallen from the top of the car.

The tibia and fibula were splintered. The joint space was opened. The wound was irregular and muscle planes were separated. Debridement was carried out, but it was felt adequate drainage had not been afforded, so Carrel tubes were inserted and Dakin's solution applied. Dakin's solution was discontinued after twenty-one days. Drainage lasted for ninety days.

There were seventeen cases in this series treated by this method. The average drainage lasted 136 days. I feel that this average would have been shortened, had more liberal drainage been instituted in some of these cases. As our experience grew in the treatment, we favored wide and dependent drainage rather than chemical sterilization. Dakin's solution properly made and correctly standardized is unquestionably a wonderful antiseptic. Had it not been used in these cases, the discharge undoubtedly would have lasted a great deal longer. But I do not feel that even good Dakin's solution will sterilize infected dead space pockets filled with clot, or devitalized tissue harboring growing bacteria. If one can aid nature in her own defense by letting off the debris, the wound will heal much more promptly.

Case 4. G. B., age 46. Injured August 14, 1925. He stumbled over a tie, falling on his outstretched hand. He was immediately brought to the hospital. The entire end of the ulna was exposed. The skin was ragged and the wound was fouled with cinders and dirt. However, the site of the wound and its general appearance made us feel that it was a case favorable for debridement and primary suture. This is a dangerous procedure, unless one feels absolutely sure of his own and his staff's surgical technic. It was widely adopted during the war, but I feel it should only be used in well selected cases in civil practice.

This patient was anesthetized, his wound being prepared as in the previous cases. A margin of the skin was cut out. All loose tissue ends were snipped off. Careful attention was paid to hemostasis. The dislocated end was then swabbed with dichloramine T, the displacement was corrected, and skin sutured without drainage. Primary healing of the wound occurred. This patient was at work two months from the day of injury, with full function of his wrist.

In performing adequate, yet not too radical debridement, it should first be borne in mind that these wounds are usually fouled in the outer portions. The deeper structures are little contaminated. Therefore, widely remove superficial tissue, but do not do much deep in the wound. Fragments of bone are not taken out unless they extrude. Even deep dead spaces are sterile at first. It is later that they become infected and give us so much trouble. It is our duty, if possible, to prevent them from becoming infected. In carrying out the debridement as little manipulation as possible is used, as any movement will further injure the patient.

Case 6. C. R., age 72. Both feet crushed by a trolley car wheel when he was thrown under the car by a passing automobile, August 15, 1925. The foot was badly crushed, both tibia and fibula being markedly splintered. The circulation was destroyed and the skin was widely divulsed and destroyed. The wound was contaminated.

There being no possible chance of saving the foot. it was amputated immediately. No strict rule for amputation can be laid down. The whole limb must be considered in making the decision—the state of the muscles, fascia, nerves, skin, joint, bone and more especially the circulation. If it is a foot that is crushed and it will only be partially serviceable after months of painful and disagreeable treatment, and if the end result will give only partial function, it is better to amputate. Well fitted artificial legs are highly successful and are an improvement over deformed, painful feet.

Table II shows the average number of days each type of wound drained under the different treatment methods.

TABLE II.
Average Length of Drainage
Compound Fracture Cases

	Days
1. Cleansing and antiseptic dressing	28
2. Drainage	110
3. Debridement and Carrel-Dakin	136
4. Debridement and primary suture, 6 cases 4 primary union, 2 failures, opened	43

SUMMARY

One should treat these wounds as though they were sterile if possible. If they are already infected or clearly contaminated, institute thorough dependent drainage and handle aseptically. Dakinizing the wound is not a good substitute for drainage. In a few cases it is possible to perform debridement and suture primarily.

TREATMENT OF FRACTURES OF THE SPINE WITH CORD INJURY*

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It is necessary to realize at once that in injuries of the spinal cord we are dealing with destructive lesions and with tissues which have for practical purposes no reparative power. Surgical repair of such lesions is beyond us and our aim is to make the best of a bad situation and to lessen progress of the damage after injury has occurred. I shall not aim to cover the methods of production of such injuries which are familiar to all, nor such factors of treatment as are concerned with repair or stabilization of bony structures.

Wide variations of opinion as to the proper handling of cord injuries occur among men, all of whom have a wide experience with such conditions. This variation of opinion applies to those cases which present signs of complete interruption of impulses through the cord as well as in those with less marked cord damage. There have been very few outstanding contributions to our knowledge of the subject in the last twenty years.

It is, of course, well substantiated that regeneration of the cord does not occur and that in no case in which the cord has been sutured has there been any more union between the severed ends than that occasioned by scar tissue. While fractures or fracture dislocations may occur at any level of the spine, we see much more frequently those occurring at the region of the fifth and sixth cervical vertebræ and those at and about the region of the twelfth dorsal.

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* Read before the Fifth Annual Meeting of Pacific Northwest Medical Association, Spokane, Wash., July 1-3, 1926.

It is recognized that a considerable number of individuals who sustain bone injuries of the spine escape without spinal cord or nerve injury. Our concern is not at present with those.

Most often the patient is brought to the hospital with a complete paraplegia, as in a case of injury in the dorsal region, or with paralysis below the fifth cervical segment in the case of cervical injuries. Most often the picture presented is that of complete sensory and motor loss with abolished reflexes. In a smaller group the paralysis and sensory loss may be incomplete. While the advisability of operation and the possibility of accomplishment by surgical treatment is our principal interest, it may be in order to comment upon certain points in treatment other than the operative side.

All surgeons are familiar with the early and rapid formation of pressure sores in these cases with complete paraplegia. It is not an uncommon experience within a few hours to find an area so devitalized that later sloughing with exposure of the sacrum and other bony prominences occurs. Every well equipped hospital, and particularly those which handle a considerable number of traumatic cases, should be supplied with air mattresses. Our first thought in such cases is to get the patient on an air mattress with a smooth covering. If this routine is followed and the knees of the patient and calves of the legs are supported on soft pillows so that there will be no weight on the heels, the problem of nursing and of later pressure sores will be so minimized that it is no longer the bug-bear that it has formerly been.

Perhaps next in order is the attention to the bladder. The great risk of infections of the genito-urinary tract with septicemia and death has often prompted immediate suprapubic drainage of the bladder in such cases. Our experience has been that this is not necessary, although from time to time instances will arise in which it seems to be a life saving procedure. As routine, it has been more satisfactory to permit the bladder to overfill, even up to the umbilicus or higher, in the hope that spontaneous leakage will then occur. It has been rather alarming to note the extreme distention that has been reached in some instances, but we have known of none in which rupture of the bladder occurred. At times we have lost courage when distention reached alarming limits and have begun catheterization. When catheterization is used, we have followed it by the introduction of a small amount of antiseptic which is left in the bladder, ordinarily using dilute solutions of the silver salts. In the presence of severe bladder infection, a continuous catheter has been left in place with bidaily irrigations with boric solution and mild antiseptic in the bladder.

Roentgenograms, both anteroposterior and lateral views of the spine, are taken as soon as the patient has recovered from the immediate shock. The necessity of lateral views in such cases seems hardly necessary to mention, were it not for the fact that on account of the difficulty of taking them they are sometimes omitted. Even extreme displacements are not always recognizable in the anteroposterior view. From x-ray plates, showing extreme distortion of the spinal canal, it is sometimes possible to make a diagnosis of complete cord severance, which cannot be differentiated from a complete cord block without severance by the ordinary clinical methods of examination. Also cord compression fractures and wedge shaped vertebræ may be overlooked in an anteroposterior plate and be obvious at a glance in a lateral view.

Having taken care of the patient to this stage, we must come to a decision as to whether more can be accomplished for him by surgical treatment. In this connection I am in the unfortunate position of not always practicing what I would desire to preach. However, a review of cases and literature of the subject convince me that, if any accomplishment is to be made in the surgical treatment of such cases, we should force ourselves to a decision early rather than to procrastinate over a period of days.

Of the contributions to the treatment of injuries of the spinal cord, a few deserve prominent mention. The work of Allen of Philadelphia, published in the *Journal of Nervous and Mental Diseases*, September, 1911, and March, 1914, is of particular interest. In a considerable number of animals he produced experimental cord crushes under carefully regulated conditions. His findings may be summarized by saying that the cord edema, which follows injury experimentally produced, reaches its maximum in a very few hours, usually about four. It was his feeling that the cord destruction from the original injury, plus a rather prominent factor of cord edema, was responsible for the total damage and lack of return of cord function. He felt that damage from the edema could be lessened by exposure of the cord and longitudinal section of the injured segments within these early hours. After that time he felt that it was of little benefit. As far as I know, no one has been sufficiently courageous and persistent to subject any considerable number of cases to this procedure.

McVeigh, in the *Archives of Surgery,* 1923, reported certain experiments conducted on dogs and human cadavers which show that, when the cord is compressed, its tissues are pulped without rupture of the surface of the cord, and that these pulped tissues are forced by pressure or subsequent edema up and down the cord to some distance from the site of lesion and dissect their way for even considerable distances. He believes that the edema reaches its height in about eight hours, that is, in a somewhat longer period than that given by Allen. He feels also that in the complete lesion the area of cord involvement by the pulp invasion tends to be larger above the level of the injury in the lower cervical and upper dorsal regions. He thinks that this is probably also true in the lumbar enlargement.

Thompson in the *Annals of Surgery*, 1923, reviewed thirteen cases of spinal injury, in which he found four that showed permanent narrowing of the bony canal.

Coleman, of Richmond, Va., conceived the idea of applying similar methods of diagnosis to injuries of the spinal cord as have been applied by Ayr and others to the slower compressions of the cord, such as we see with spinal cord tumors. If free circulation of the cerebrospinal fluid occurs up and down the spinal canal, as can be demonstrated by spinal puncture and manometric readings, or by combined cistern and lumbar puncture, there is, of course, no compression of the spinal cord. Coleman studied fourteen patients, two by means of the Queckenstedt tests. By this method lumbar puncture is done and the needle connected with a manometer and the fluid pressure measured. Queckenstedt called attention to the fact that under such conditions, if the neck is compressed on both sides, in such a way as to compress the internal jugulars, the intracranial pressure is raised and this in turn is transmitted to the spinal fluid which shows a rise in the manometer readings. This gives about the same information as a comparison of manometer readings when the manometers are attached, one to a lumbar puncture needle and one to a needle in the posterior cistern.

Coleman found that in two cases the block of the subarachnoid space gradually increased and became complete in fourteen to eighteen hours after injury. In his series the block was verified by operation in five of the seven cases. He concluded that repeated tests for block are necessary; also that a clinical study of the patient's injuries failed to give early information as to the extent of the cord lesion. In a severe, incomplete lesion with pressure sufficient to block the subarachnoid space, the pressure should be relieved early to conserve such fibers as have escaped destruction by the original injury. It was his belief that complete occlusion of the spinal subarachnoid space should be taken to mean that the cord is compressed in a deformed or normal dural canal. Demonstrations of such compressions should be considered a nonequivocal indication for operation.

Our own experiences with laminectomy for cord injury have caused us to modify our ideas of the common pathology. One may encounter bony pressure upon or complete severance of the cord or pressure upon it by intradural hemorrhage. While these do occur, it has also been a common experience to expose the cord at the level of injury and to find very faint or no surface evidence of that injury. Slight alterations in color or slight yellowing of the fluid a few days after injury is often seen. We have more often been impressed with a lack of findings than by the apparent severity of the destruction. It is a common experience, however, when operating upon such cords, to find that, if exploration is made with the blunt end of a fine needle throughout the posterior columns of the cord or with a cataract knife, there is promptly an extrusion of pulp and finely granular or tan-colored cord substance, indicating that within the cord there has been pulping of all or nearly all its substance. This may be present when the surface of the cord appears essentially normal at the site of injury.

While we have not subjected any considerable number of cases of cord injury to operation in the early hours following the receipt of the injury, the work of Sweet and McVeigh and the clinical experience of Coleman give much to indicate that these cases should be put in the category of early emergency operations and that detailed observations be made of them, particularly by the method of Coleman. It would seem that plan should be followed, at least until more evidence is forthcoming.

Early spinal puncture with manometric reading and the use of the Queckenstedt test to determine the presence or absence of block, or the occurrence of increasing blockage of the canal should give us a more rational basis for treatment than we have had yet. When block is present, laminectomy is advised. The dura should be opened and a small incision made in the posterior columns, when complete paraplegia is present.

Injuries of the cauda equina are in a class by themselves. It will be recalled that the cord terminates at the lower margin of the first lumbar vertebra. Below this level the dural canal is occupied by the filaments of the cauda equina. Injuries below the level of the first lumbar vertebra, then, are in the category of injuries of peripheral nerves, in that the elements of the cauda equina are capable of regeneration.

In crushes of this region with signs of nerve damage, early operation is to be urged and may be of striking benefit. Delay in such operations is harmful and long delay may render proper recovery impossible. In this connection it has been our experience to operate upon one patient who received a crushing fracture of the lamina and spinous processes of the third and fourth lumbar vertebra at a time when he was far removed from surgical help. He came into our hands some nine months afterwards with signs referable to an almost complete lesion of the cauda equina at this level. Operation showed that the cauda equina was matted together in adhesions and a mat of scar. The individual filaments were inextricable in the mass. Apparently some crushing of the cauda equina had occurred with large hemorrhage and organization into a mass of scar tissue, which was impossible to separate. Operation and removal of hemorrhage and compression at the time of injury would undoubtedly have permitted a complete or nearly complete recovery in this case.

In connection with cord injuries at the level of the twelfth dorsal, there are certain considerations which have received little mention. At the level of the twelfth dorsal vertebra we are frequently confronted with a complete paralysis of the lower extremities. It is to be recalled that at this level the canal is occupied not only by some of the lower segments of the spinal cord, but also on each side of the spinal cord by some three or four roots which have their origin in uninjured segments above this level. These filaments pass on down to seek their emergence from the canal at points below the injury. Complete transverse injuries, then, at the level of the twelfth dorsal vertebra or thereabouts involve not only injury to the cord but injury to nerves. While the cord itself may be completely destroyed or damaged to a degree so that it is incapable of recovery, the same does not hold true of the nerve bundles at this level. While we may be powerless to accomplish anything for the cord so badly damaged, it may still be within our power to permit of recovery in the remaining contents of the canal at this level. If this can be done, we may be able to restore to the patient at least flexion at the hip joint and convert the future of the patient from that of a bed-ridden invalid to one who is able to resume a sitting position and carry on the remainder of his existence in a wheel-chair.

In connection with operative treatment I would urge particularly for this class of cases laminectomy under local anesthesia. Either nerve blocking or local infiltration gives satisfactory results and is easy of accomplishment.

In the later life in such patients as must bear the burden of complete paralysis of the lower extremities, the principal risks to life are, of course, concerned with infection arising from the genito-urinary tract or from decubitus. Certain patients properly protected may live for long periods and in this connection it seems worthwhile to mention that the physician's obligation does not end with the active medical and surgical measures which have been mentioned above.

Patients who can be restored to a point where they can assume sitting positions in bed or in a wheel-chair with properly padded rests or braces should be asked very promptly what work they intend to do. Such a question usually proves to be a staggering one to such an invalid. The question serves to confront them with the view that they still have obligations and possibilities. It is better for their morale than to let the subjects go in a placid acceptance of the fact that they are invalids with a complete and permanent disability. It has been possible in several instances to have patients with unimpaired upper extremities take up respectively watch-making, typewriting, copying and radio repairing.

CONCLUSION

There is considerable experimental and clinical evidence to indicate that delayed operations in cord injuries offer far less of help to the patient than operation in the first few hours in the presence of a cord block.

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BONE TUMORS

THEIR CLASSIFICATION AND ROENTGEN APPEARANCE*

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Since the establishment of the Registry for Bone Sarcoma in 1921, there has been a definite advance in our knowledge of these tumors. This has been due in a considerable part to the efforts of Dr. E. A. Codman of Boston, the first registrar. He has recently given us a summary of his observations in a small book which should be read by every physician interested in the study of bone tumors.

The confusion existing previous to the work of the registrar, and to a less extent now, is due in considerable part to a complicated nomenclature based on histologic findings. This has been simplified and placed upon a clinical basis. Another source of confusion was the different terms used to describe these tumors by various pathologists, who in many cases arrived at entirely different conclusions. Until the pathologists adopted a common nomenclature, there could be little advance in the clinical fields. The work of the registrar has helped to bring this about.

Since many of these tumors are composed of cells originating from different tissues, it is obvious that a diagnosis based on a single specimen of tissue is often erroneous. The pathologist must have the clinical history and the gross appearance of the tumor as shown by x-ray, as well as the specimen of tissue before he can arrive at a correct diagnosis. The surgeon should recognize this and not place too great reliance on a report based upon the microscopic examination of a single specimen removed for diagnostic purposes, especially if this specimen is a poor one, and the report is negative for malignant disease.

The collection and study of a large number of malignant bone tumors, operated upon by competent surgeons from widely separated localities, has shown that the number of cures by any type of operation is very small. The danger to the patient up to the present time has not been in the failure to operate, but in too radical operations upon benign lesions. Most of the cases cured of "malignant" tumors by amputations of extremities have upon further study been shown to be benign. Until we are able to detect bone tumors at a considerably earlier stage than we do at present, it is of greater importance to make a correct diagnosis than to institute prompt therapeutic measures.

Physicians of wide experience in the diagnosis and care of these cases, i.e., Ewing, Bloodgood and Codman, place the examination by x-ray among the first of the methods of value in obtaining a correct diagnosis. A knowledge of the roentgen appearance of these tumors in their various stages should, therefore, be of the greatest value.

The roentgen examination should not only include several views of the bone involved with its articulating surfaces, but should also include a search for lesions in other bones, and an examination of the lungs for possible metastases. The films should be of good quality and free from motion. They should show the structure of the normal bone and of the tumor. A film taken after the removal of a specimen for diagnostic purposes, when this procedure is considered advisable, may be of help to the pathologist in determining the relation of the specimen to the tumor as a whole.

The interpretation of the roentgen findings should be based upon the classification outlined by the registry of bone tumors, and modified by a knowledge of the clinical and pathologic findings.

In the study of a bone lesion where sarcoma is suspected, it is of importance to decide, first, whether or not it is a bone tumor; second, whether or not it is a benign or malignant tumor and, third, if a malignant tumor whether metastasic or primary in origin. A definite diagnosis may be impossible. The final conclusions should be based, not upon a single (isolated) observation, but upon all available data.

In general, it may be stated, first, that bone lesions other than primary tumors occur more often as multiple lesions. They frequently invade joints or cross cartilage, which tumors rarely if ever do. They are more irregular in the way in which they distroy or produce bone and they do not produce bulging of the bony shell. Second, benign bone tumors are purely destructive or proliferative lesions. When proliferative they usually arise from a definite pedicle and contain some of the structure of normal bone. They do not invade the surrounding tissues and when destructive they tend to produce bulging and trabeculation. Third, primary malignant tumors of the bone with two exceptions (myeloma and Ewing's tumor) are single lesions in bone. That they tend to invade the surrounding soft tissues which metastasize, bone tumors seldom do. They

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*Read before the Fifth Annual Meeting of Pacific Northwest Medical Association, Spokane, Wash., July 1-3, 1926.

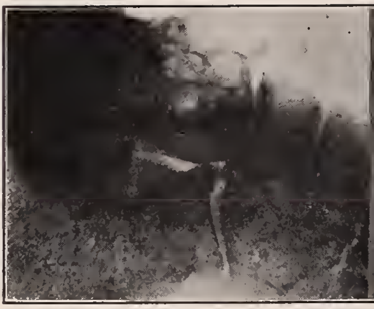

Fig. 1.

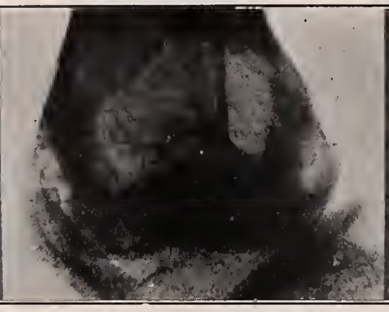

Fig. 2.

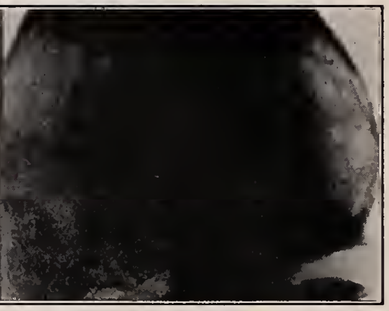

Fig. 3.

Fig. 1. Giant-cell tumor of the astragalus. The lesion presents the characteristic "soap-bubble" appearance It does not involve the joint. The size of the bone is increased.

Fig. 2. Giant-cell tumor of the lower end of the femur. The process extends into the condyle. It does not involve the joint, although there has been a fracture into the joint space.

Fig. 3. Giant-cell tumor, same case as plate two, anteroposterior view.

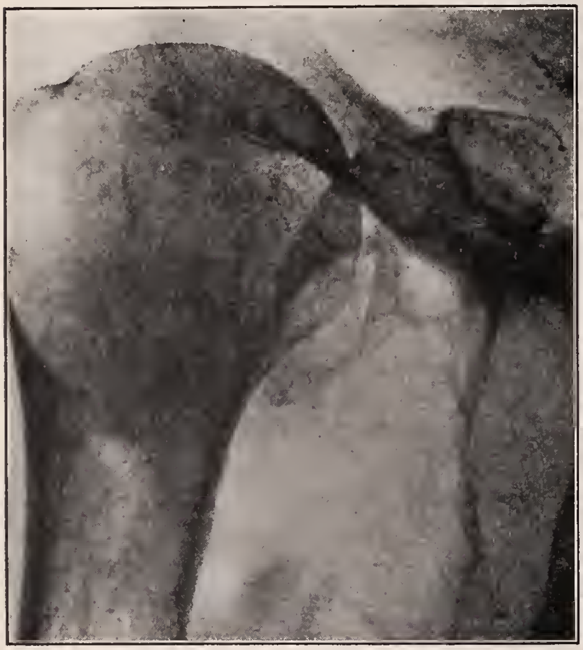

Fig. 4. Metastatic hypernephroma. The process involves the outer end of the clavicle and the axillary border of the scapula. There is bulging of the bone, and trabeculation. In some areas the cortex is destroyed and the tumor has invaded the soft tissue.

frequently show new bone laid down at right angles to the shaft, producing the so-called ray formation. It may also be stated that the malignant tumors either metastasic or primary are extremely rare in the hands and feet.

The table (page 17) may be used as guide to the observations made and described:

Exostoses are irregular extensions of normal bone into the surrounding tissues. Their structure is that of normal bone, and they blend into the bone at their site of origin. They may appear in any portion of the skeleton but are most commonly found near the ends of the long bones. Their shapes vary from thin hook-like processes to broad rounded masses.

Multiple cartilaginous exostoses are an hereditary anomaly of growth, in which irregular outgrowths of cartilage and bone appear in the regions of the epiphyseal lines. These tumors usually involve several epiphyses, causing considerable deformity and interference with growth.

Osteoma and osteochondroma are true bone tumors. They contain variable amounts of bone and cartilage. They arise from the cortex upon a pedicle and often present a cauliflower-like appearance, with transparent nodules of cartilage scattered throughout the mass. They never invade or destroy bone.

Enchondromata cause irregular asymmetrical enlargements of bone. They are usually multiple, and are most common in the hands, feet and long bones. There is considerable distortion in the outline as a result of the tumor growth, with or without thinning of the cortex, and trabeculation. In extensive tumors, the thinning of the cortex may be extreme. It is reduced to small, thin flakes of bone on the periphery of the growth, which in a single film are projected upon the tumor and may be mistaken for calcification within the growth. These tumors may also be confused with giant-cell tumor.

Giant-cell tumors are of slow growth. They do not infect the regional lymph glands, or metastasize to distant parts, neither do they recur after removal, except in rare instances. They may extend along fascia and muscle planes, or protrude into a joint, but do not invade the surrounding tissues.

Pathologists disagree as to their classification, and their microscopic appearance is variable. Clinically and roentgenologically, however, they present a fairly typical appearance. In the roentgenograms these tumors usually appear as a single, central lesion near the epiphyseal line of the long bones, although they may occur in the flat bones, particularly the jaw. They tend to grow equally in all directions, but in a number of cases the greatest extent is along the medullary canal, which is the path of least resistance. There is a bulging of the cortex, rarely a break. The intact cortex is an important point in the differentiation from a malignant tumor. The soft tissues are not invaded except in cases where a fracture has occurred. The process does not cross cartilage.

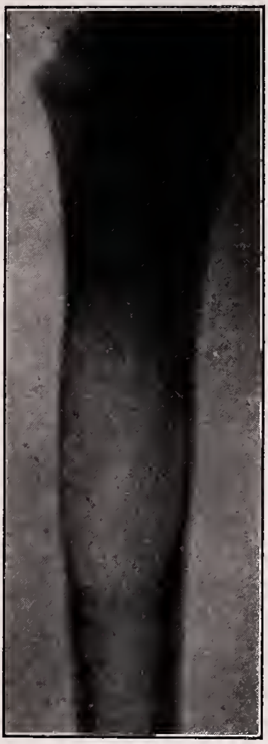
Fig. 5. Simple cysts of the shaft of the humerus. Note the absence of trabeculation and of definite bulging of the bone. The process extends along the medullary channel. It is well below the epiphyseal line which is still visible.

In adults the lesion is almost invariably in the epiphyseal end, and extends toward the joint surface where it is sharply limited. These tumors apparently start very close to the epiphyseal line and advance toward the joint. The shadow of the involved area as seen on the roentgenogram has a characteristic appearance. The bone is widened with a lobulated outline. It is more radiant than the surrounding structures, and is divided by many trabeculæ. These trabeculæ are a constant finding. They vary considerably in size and in the clearance with which they can be demonstrated. The process does not invade the neighboring tissue but may extend along ligamentous attachments and in this way involve the adjoining bones. A characteristic finding is extension of the process into bony projections, as, for example, the condyles of the femur or the various processes of the vertebræ.

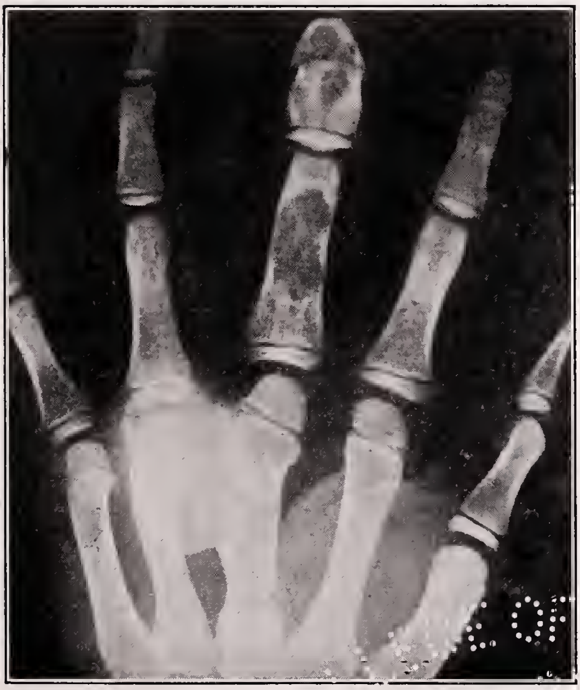
Fig. 6 Multiple endrochondroma. The single lesion resembles closely, giant-cell tumors. The process is usually multiple.

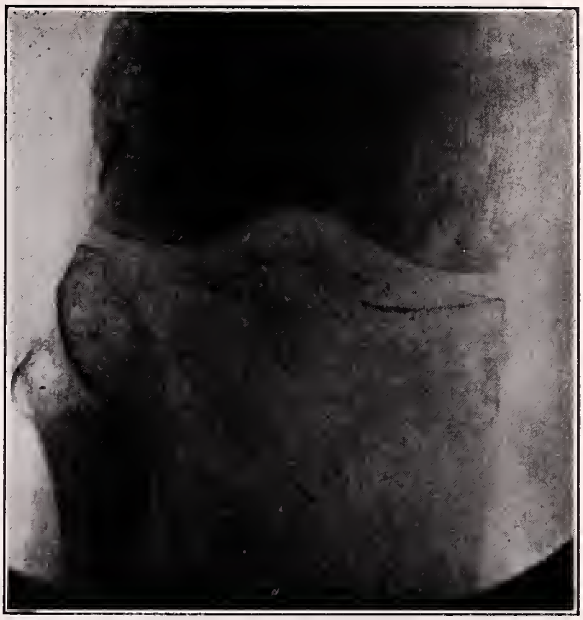
Fig. 7. Osteogenic malignant tumor of the upper end of the tibia. The lesion is of the medullary type. Note the absence of definite trabeculation and of bulging of the cortex. The lesion has extended through into the soft tissues but has not invaded the joint.

Bone cysts occur in the long bones and in the jaw. They are characterized by sharply defined, rounded or oval areas of rarefaction, containing few or no trabeculæ. The process is entirely within the shaft, and spreads longitudinally in the medulla without involving the cortex which, however, may be considerably thinned from pressure. There is no deformity in outline unless a fracture has occurred. Spontaneous fractures are often the first indication of the lesion, and they are usually followed by callous formation and disappearance of the cyst.

Allied to cystic disease is a rare condition, *ostitis fibrosa,* which may involve one or all of the bones. The normal structure is replaced by irregular strands of trabeculæ, enclosing multiple cysts which vary in size and shape. There is considerable ex-

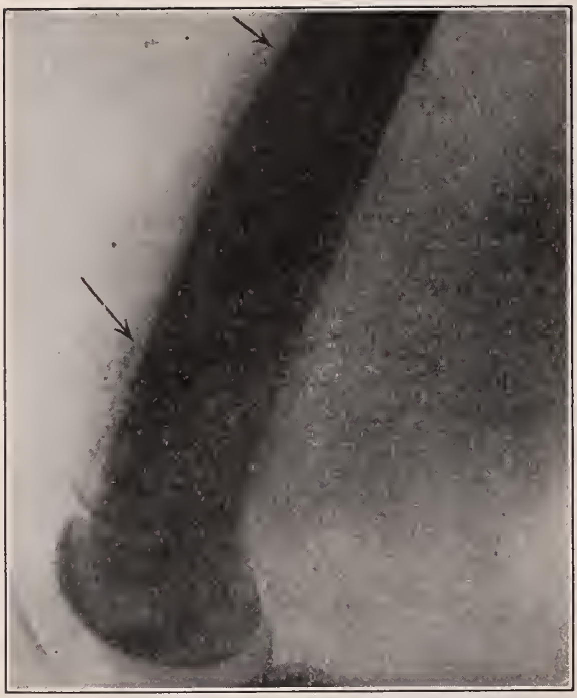

Fig. 8. Osteogenic malignant tumor of the periosteal type. This case presents the typical "ray formation" seen in a large percentage of these tumors. There is also a periosteal collar at the margin of the tumor due to the extension of the growth beneath the periosteal.

pansion of the bone, and spontaneous fractures are common as a result of the thinning of the cortex.

Fibroma is a rare growth which occurs in the medullary portion of long bones. It expands the shaft, causes thinning of the cortex and shows fine trabeculation throughout its extent. It pursues an extremely chronic course.

Osteogenic sarcoma appears as a single lesion in the shaft of long bones in individuals generally under thirty years of age. They may be osteoblastic, osteolytic or both. They do not cross cartilage or invade joints, but do destroy the cortex of the involved bone with early invasion of the surrounding soft tissue, which produces a soft tissue tumor, visible on the film. Anatomically there are four main types:

1. *Fibrocellular* or periosteal arises from the inner layers of the periosteum, extending along and enclosing the shaft. It remains encapsulated by the periosteum for periods varying with the character of the growth. In the early stages the roentgen appearance is that of slight erosion and mottling of the affected cortex, surrounded by a soft tissue swelling, which is quite suggestive of a beginning osteomyelitis. With increase in the size of the tumor, the erosion of the cortex increases and periosteal proliferation becomes evident at the limits of the growth upon the shaft. Strands of calcified material are seen radiating outward through the tumor, producing the so-called "ray formation." Other members of this group show more medullary involvement and may contain a mixture of cartilage or mucoid material.

2. *Telangiectatic* usually arises in the medulla and is characterized by an extensive development of blood vessels throughout the growth. Arteriovenous aneurisms may occur, causing the mass to pulsate. The prognosis in this type of case is poor as metastasis occurs early. Absorption of bone may be rapid. Frequently the more solid portions of the growth show calcified strands similar to those in the previous group.

3. *Sclerosing.* The appearance of these tumors is due to the production of dense bone within the tumor, so that in typical cases a mass of ivory-like density obliterates the narrow cavity, and produces a more or less fusiform swelling about the shaft. They are generally slow growing and, as a rule, do not metastasize early. On the film they present dense, cottony shadows somewhat resembling benign osteochondroma, but they do not arise from a pedicle or contain trabeculated bone.

4. *Undifferentiated.* This group of tumors is entirely osteolytic. In the roentgenograms, they show only loss of substance and no bone proliferation. Histologically they are composed of round cells which show no tendency to produce definite structure.

Ewing's tumors appear in two forms, probably depending upon whether they develop from the blood vessels of bone substance or of marrow. The first is similar to osteogenic sarcoma and probably is frequently diagnosed as such. They are situated somewhat farther from the ends of the long bones, and there is more localized destruction of the cortex. There is generally more periosteal new-bone formation, occurring in layers partially or completely surrounding the tumor. The second form produces a mottled or coarsely trabeculated structure in the affected bone, somewhat suggestive of osteitis deformans in some cases and of myeloma in others. Usually a considerable portion of the shaft is involved. In the flat bone it may resemble giant-cell tumor.

The growth also occurs in a multiple form, which roentgenologically cannot be differentiated from myeloma or carcinoma. They respond readily to

CLASSIFICATION	SUBDIVISIONS	POSITION	MULTIPLE OR SINGLE	AGE	SOFT TISSUE TUMORS	OSTEOGENIC OR OSTEOCLASTIC	SPICULA TRABECULAE OR FLUFF	RELATION TO JOINTS	COLLAR OR TRUMPET	INVASIVE OR PLASTIC	FRACTURES COMMON OR NOT
1. Metastatic tumor of bone.	Osteolytic or Osteoplastic	Any part of any bone except hand and feet	Nearly always multiple	Middle life or older	None	Either or both	None	Does not invade joints	None	Medullary invasion	Common
2. Periosteal Fibrosarcoma	None	Bone not invaded as rule	Always single	Any age, usually in youth	Marked; may be no other lesion	May be some bone destruction	None	Usually some distance from joint	None	Invasive	No
3. Osteogenic Benign	Exostosis Osteoma Chondroma Fibroma	Near epiphyseal line. More commonly long bones.	Both; more commonly single	Youth and early adult	None	Osteogenic only	Lobulated	Near epiphyseal line. Joint not involved.	None	Plastic	No
Malignant	Medullary Periosteal Sclerosing Telangiectatic	Shaft—Long bone Rarely in flat bones	Always single	Any age	Usually present	Both; either may predominate	Spicula or fluff	Usually well away from	Present usually	Invasive	No
4. Inflammatory conditions	Bone cysts	Shaft	Usually single	Youth	None	Osteoclastic	None	Not involved	None	No	Common
	Calcifying Hematoma	Soft tissue	Usually single	Any age	Diffused swelling	Osteogenic	None	Not involved	None	No	No
	Osteomyelitis	Any bone	Usually single	Any age	Diffused swelling	Both	None	May involve	None	Invasive	No
	Callus	Any bone	Usually single	Any age	None	Osteogenic	None	May involve	None	No	No
	Syphilis	Any bone	Usually multiple	Any age	None	Osteogenic	None	May involve	None	No	No
5. Benign Giant-cell tumor	None	Flat bones and ends of long bones may extend into condyle or tuberosity	Always single	Any age	None; unless fractured	Osteoclastic	Trabeculae constant	Close to; but usually does not involve	None	Plastic	Common
6. Angioma	Benign	Any bone; more commonly in extremities	Usually single	Any age	None	Osteoclastic	Trabeculae	Does not involve	None	Plastic	Common
	Malignant		Usually single		May be	Osteoclastic	Trabeculae occasionally	Does not involve	None	Invasive	Common
7. Ewing Tumor	None	Any bone, more commonly in shaft of long bones	Usually single	Young adults and children	Usually present	Both	Spiculae	Does not involve	Marked	Invasive	No
8. Myeloma	None	Any part of long bone; more commonly flat bones	Always multiple	Late adults	None	Both; destructive process predominates	None	Does not involve	None	Invasive	Common

irradiation therapy, and in this respect they differ from most other tumors of bone.

Myeloma is a slow growing malignant tumor of the bone-marrow, which produces multiple areas of rarefaction, most often seen in the flat bones. It is found chiefly between forty and sixty years of age. Deformities in the outline of the involved bones occur as a result of thinning and expansion of the cortex overlying the growth. Spontaneous fracture is fairly common. The roentgen appearance resembles that of metastatic carcinoma, but the areas are finer and hazier in outline, the distribution is similar, the sternum, vertebra, skull, pelvis, scapula and humerus being most often involved. The lesion is always multiple and is accompanied by Bence-Jones bodies in the urine. Some cases have responded well to roentgen therapy for a time.

SUMMARY

1. The importance of a simple classification on clinical as well as the pathologic basis is emphasized.
2. The errors arising from instituting therapeutic measures before a definite diagnosis is established are pointed out.
3. Attention is called to the difficulty of making a diagnosis from a single specimen removed for such a purpose.
4. The technic of examination by x-ray is discussed.
5. The roentgen findings in the various types of bone tumors are described.

OSTEOCHONDRITIS OF THE SECOND METATARSOPHALANGEAL JOINT

(KOEHLER'S DISEASE)

REPORT OF A BILATERAL CASE

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In a previous article on this subject* I made the statement that this condition has not been found to occur bilaterally in the ninety cases reported up to February, 1925, and in my seven additional cases. Since that time numerous articles have been published concerning this disease, but I fail to find the report of a case with bilateral involvement. However, I would stand corrected, if it should be pointed out that bilateral cases have been mentioned in literature, since some of the articles I have not viewed in their original form but had to rely upon abstracts of them.

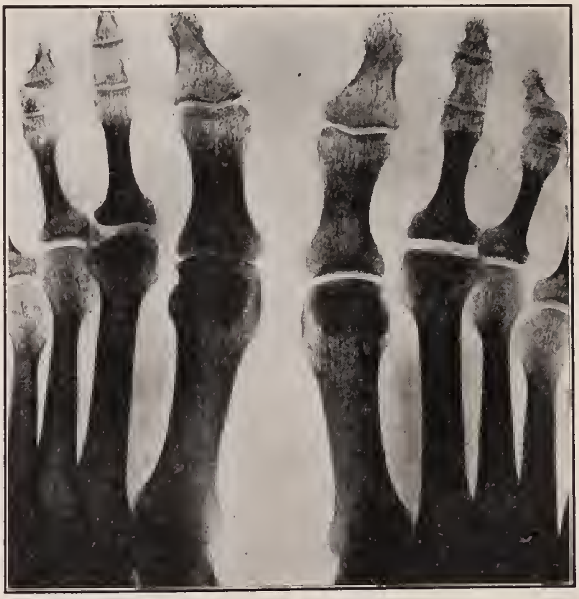
In view of the rarity of this condition, it seems valuable to describe this case of bilateral osteochondritis which came under my observation.

Miss M. F., school teacher, age 21, complained of pain in both feet in the regions of the second metatarsophalangeal joints. The pain was of about five years duration and of gradual onset without any known cause. There was no acute injury, but the pain was always more severe on standing or walking and always localized in the area of the second joint. Past and family histories are negative to any similar deformity and to constitutional diseases.

Examination: Mild swelling and marked tenderness over the distal heads of both second metatarsals, the right side being the worse. The metatarsal heads are larger than normal and on the right side larger than on the left. On weight-bearing there is flattening of the longitudinal and anterior arches.

The radiogram reveals the characteristic shadows of this affection: (1) Changes in the third phalanges. The shafts are thicker, the heads wider and heavier. (2) Considerable widening and irregularity of the joint spaces. (3) Flattening of the distal metatarsal heads, so that the circular outlines are lost. (4) Calcareous deposits on the joint capsule. (5) Thickening and shortening of the distal ends of the metatarsals, so that the normally dainty necks are obliterated. (6) The shafts of the bones are increased in circumference. (7) The internal architecture of the heads have reformed, showing bone lamellation, as is found in all old standing conditions. On the right side these findings are more expressed than on the left.

The significance of this case is that it adds some proof to the theory that this disease is of traumatic nature and not developed, in the sense of Axhausen, from an obstruction of the epiphyseal end-arteries by a micotic embolism which may be of tuberculous or mildly pyogenic nature. The theory of chronic trauma is based upon the disproportion between the weight bearing capacity of the second metatarsus and


This radiogram shows characteristic changes of osteochondritis of the second metatarsophalangeal joints of both feet.

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* Gottlieb, A.: Osteochondritis of Second Metatarsophalangeal Joint. Calif. and West. Jour., 23:1019, Aug., 1925.

the function it is called upon to perform. The predominance of the latter over the former results in the disfiguration of the metatarsal head.

The theory is sustained by the anatomic fact that the second metatarsal head is projecting distally beyond the other heads and is thus receiving most of the superincumbent weight in walking. At the final act of each step excessive burden is transmitted through the second metatarsal head, exposing it to direct pressure from above and to various insults from the unevenness of the ground below. This theory is further substantiated by the observation that the affection is absolutely associated with pes valgus, pes transversoplanus and halux valgus. Under these circumstances of static foot defects the metatarsal heads descend from their normal convex position and receive the impact of the body weight with each step, whereby the head of the second metatarsal, the longest of the five, carries the heaviest burden and suffers the greatest harm. Although trauma cannot be established in the history of the case nor through clinical evidence, the influence of chronic trauma cannot be denied. This case of bilateral involvement substantiates the traumatic theory insofar as it removes the objection, why are not both feet involved, since the same anatomic predisposition and functional harm prevails in both feet?

607 South Hill Street.

SALVARSAN INJECTION IN THE SWELLBODY OF THE NOSE

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SEATTLE, WASH.

Under the heading "Convenient Salvarsan Injection," Dr. Palte describes in *Zeitschrift für Hals, Nasen, und Ohren heilkunde,* Vol. II, 1922, the use of the venous plexuses of the nose for salvarsan injections. I did not think of it until I got a patient with overdeveloped adipose tissue, where I was unable to find a sufficiently large vein for injection. It was a lady who suffered from iridocyclitis syphilitica of both eyes. She turned out to be a willing and ideal patient for a first trial with this method, and I have used it many times since. This method should be of special interest to the rhinologist, but also to any physician who is familiar with the use of head mirror and nasal speculum.

Prepare head mirror, nasal speculum, forceps and cotton sponge. Fill a glass Luer syringe, holding 10 liquid c.c., with 0.6 to 0.9 neosalvarsan dissolved in 6 to 8 c.c. water. Attach to it a needle of 1¼ inch length and 22 gauge.

With the aid of nasal speculum bring into view the anterior end of the lower turbinate of either side. I use them alternately. Stick the needle in the swellbody and inject slowly the solution. Withdraw the needle, press the sponge against the puncture and leave it there for a few minutes to prevent bleeding. There is no swelling noticeable at place of injection, as the fluid is immediately carried away into the veins. The patient does not complain of pain or other untoward effects.

Do not push the needle too far in, as you may penetrate under the periosteum into the bone and cause pain, when trying to force the injection. The solution should flow in easily. Cocaine is not needed, rather contraindicated, as it would contract the swellbody and make the injection difficult. There is no danger of infiltration of surrounding tissues and abscess formation.

I have not observed any reaction, as vomiting, diarrhea, chills, etc. But this may be due to the fact that I am using only 6 to 8 c.c. of water to dissolve the neosalvarsan and so prevent the danger of throwing a large amount of fluid into the circulation. This method is especially indicated in persons with small veins, as stated before, but can be used in any case on account of its simplicity.

Pneumonia from Public Health Point of View. C. J. Vaux, Pittsburgh (*Journal A. M. A.*, Dec. 11, 1926, describes the steps taken by the Pittsburgh Department of Health since April, 1924, in the prevention of pneumonia. The death rate for the first eleven months of 1923 was 319 per hundred thousand. For the same period in 1926, it was 168. In Pittsburgh, the regulation covering reports of cases of pneumonia is: "Pneumonias (all forms) are reportable diseases in the city of Pittsburgh; specify (a) lobar pneumonia; (b) bronchopneumonia; (c) pneumonia complicating influenza; (d) pneumonia complicating other communicable diseases; (e) all other pneumonias, as traumatic, anesthetic, senile, etc.; specify whether lobar pneumonia or bronchopneumonia in all of the above primary conditions." Actual quarantine in certain types of cases is optional with the department of public health; also, the quarantine regulation is a modified quarantine, as follows: "Modified quarantine will be enforced in all cases of pneumonia, except that under the classification (e) ('all other pneumonias, as traumatic, anesthetic, senile, etc.') may be quarantined at the option of the department of public health. This modified quarantine will consist of placarding, isolation of the patient, prohibition of all visitors, but no restrictions on other members of the household, including school children, provided isolation is complete and instructions from the department of public health are properly carried out. No minimum number of quarantine days specified, the quarantine period being until recovery or death of patient." Complete sanitary cleaning of the premises is required before release, but, when this is accomplished thoroughly following the physician's report of recovery, quarantine release is made at once. In a fatal case, after sanitary cleaning, no funeral restrictions are made.

DIATHERMY IN THE TREATMENT OF PNEUMONIA*

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NEW YORK CITY

The term "diathermy" was first used by Nagelschmidt and, as the word implies, signifies heating through or "thermalpenetration." The latter term has long been in use in this country in describing the method.

The use of heat as a therapeutic measure is as old as medical practice. Poultices, stupes and other applications of heat have been employed with benefit during the ages. Such applications only affect the skin, as the circulating blood carries away all excess heat.

The action of heat derived from the sun's rays and reflected artificial light have not, until in comparatively recent times, been adequately appreciated in comparison with other methods of applying heat. It is now well understood that radiant energy from luminous sources penetrate to considerable depth into the tissues and, by the transformation of radiant energy into heat units, conveys or produces heat in the underlying structures and reflexly stimulates the cardiac, respiratory and other centers by the effect on the peripheral nerve endings. The latter effect is pronounced from reflected radiant light and heat and, in lieu of diathermy or when the heart is failing, is a useful measure at the bedside in pneumonia. This was shown by Torbett and Williams[1] in the pneumonia epidemic of 1919, in which both reported the loss of no cases in which reflected radiant light and heat were employed.

Diathermy, as produced by the high frequency current of d'Arsonval, is the only method that can produce heat through the body with approximately uniform temperatures. The effects derived from heat administered in this manner are now assuming a very important role in the treatment of infection. Rates of frequency exceeding ten thousand oscillations per second pass through the body with the resultant effect of heat and other effects of the oscillations upon tissue metabolism and bacteria when present.

The high frequency current by the local or bipolar method heats the tissues as it passes in parallel lines of oscillations between the opposing electrodes. It is readily demonstrated, furthermore, that if the current is passed through a solution of iodide of potassium, no precipitate is thrown down. There is, therefore, no electrolytic action of this current.

Dosage. The limit of heat transmission is skin toleration at the surface. The hot wire milliampere meter as a guide to dosage of the current is only a relative index, (1) because apparatus is not standardized, and (2) because the effect on the patient's heart must be the guide. Under normal conditions the toleration of heat at the surface will be the liimt of dosage. The underlying tissues are not favorably affected by temperatures below 115°F.

The effects from the employment of diathermy in pneumonia, as determined by the findings, are obviously relative to the resistance of the pneumococci to heat as shown by the fact that all early cases treated by diathermy terminate by lysis, not in the usual way by crisis. The pneumococci survive under low temperatures—below freezing—but rapidly succumb to a temperature of 125° F. in ten minutes.

The records of Sternberg,[2] quoted by Hiss and Zinsser,[3] show that a temperature as low as 105° F. will arrest the development of the bacteria and that even lower temperatures inhibit their growth. Hiss and Zinsser[4] state that "the growth of pneumococci is most favorable at 99.5° F. and development ceases below 77° F., and above 106°." A. Frankel[5] states, according to Hiss and Zinsser, that "at room temperatures of from 60° to 72° F. the growth of pneumococcus ceases." It will be seen, therefore, that the range of proliferation of the pneumococcus is between the temperatures of 72° and 106° F., and that at about body temperature development is most favorable.

With these premises, it can be readily understood that the administration of diathermy, with the current passing through a consolidated pneumonic process with or near the temperature at which development ceases, causes the proliferation of the pneumococcus to be arrested. It is shown, furthermore, that in the record of cases treated, except those at about the period of resolution, the temperature may after the first administration rise a little, but then it begins to fall and continues to by lysis, indicating an arrest of the active pneumonic process. The relief afforded in cases of acute bronchitis and acute pleurisy, both of which promptly yield to from two to four properly applied administrations of diathermy, is evidence of its effects on the bacteria present in those conditions. The method of administration will depend largely upon the stage at which a case comes under observation.

In the acute stage of pneumonia, before consolidation, the treatment is pushed with as high temperatures as the skin will tolerate and with long exposures. Place two warm, moistened electrodes of soft metal, preferably of a thickness of 22 B.S. gauge and approximately 8x10 inches square, one over the involved lung and the other over the opposite lung, and pass the current as in acute bronchitis and pleurisy for one hour at a temperature that the skin will tolerate, which will be approximately 106° F. This should terminate the active process in the pleuritic stage before consolidation, as it does in other pulmonary affections. An administration of this sort should be applied at least twice in twenty-four hours, or better still three times on the day of the initial chill. There can be no contraindication to this procedure in patients otherwise normal as to the cardia and any other vital organs. Cases treated in this manner have a fair prospect of terminating favorably in the first days as pleurisy has. The method has been repeatedly successful in relieving the pain and lesion in acute pleurisy. Cases so relieved indicate a forerunner of what might otherwise have terminated as pneumonia. Experience has shown that the earlier cases are treated for pneumonia by diathermy, the more prompt will be the cessation of toxic symptoms and temperature, and the more certain the recovery.

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* Read by invitation before the Philadelphia County Medical Society, February 10, 1926.

To call for the administration of diathermy after the condition is far advanced and the heart is weak and irregular will militate against a favorable outcome. In an advanced case, the administration should be made transversely with electrodes 4x7 inches, gradually increasing the current and observing the pulse during the administration. Under conditions of a weakened or failing cardia it is not advisable to pass the current directly through the heart as advocated by Stewart, lest the depression be increased. This is well shown in the treatment of myocarditis, when a mild current administered with the cardiac responses observed, without reference to the milliamperage, will determine the dose; whereas, an indiscriminate employment of a heavier dose will cause collapse.

Diathermy should be applied in critical cases of pneumonia with the same care as in myocarditis. The current should not be administered with the electrodes placed anterioposteriorly except in cases of bronchopneumonia. Then the operator is governed by the cardiac condition as indicated by the pulse.

In advanced cases of lobar pneumonia with cardiac depression place the surface electrodes, 4x7 inches, in the longer way, in such a position that the current will not pass through the cardia but across the chest in the posterior cardiac space. Surface administrations of radiant light and heat with diathermy employed as stated will greatly improve the heart's force by reflex stimulation of the deep cardiac centers from the periphery. Peripheral treatment with reflected incandescent light in critical cases will often turn the tide to recovery.

The summary of published records of cases of pneumonia treated with diathermy well illustrates important observations. The first known record of the treatment of pneumonia by diathermy is from a personal experience of Dr. Frederick de Kraft[6] in February, 1913, when after a five days' illness he was promptly relieved by treatment with diathermy. Metal electrodes were applied over the lung and 1500 ma. of current applied for thirty minutes. After the first administration, respiration was relieved, cyanosis disappeared and recovery was prompt.

The earliest published report of cases of pneumonia treated by diathermy was made by Dr. Byron Sprague Price.* The following observation was made: "During the stage of engorgement, and as well that of hepatization, however extensive, thermopenetration (the early term for diathermy) induced by proper quality of current gives prompt relief, both subjective and objective. Further, it is an active form of treatment which extensively decreases the mortality percentage."

He used electrodes 7x8 inches and 1700 to 1800 milliamperes of current for thirty minutes. Dr. Price's observations were made, as has since been generally observed, that *defervescence takes place by lysis.*

An opportunity was afforded by Dr. Harry Eaton Stewart[7] as consultant to carry out observations of the results from diathermy on groups of cases at U. S. Marine Hospital, No. 21, New York. The first nine cases so treated were reported at the annual meeting of the American Electrotherapeutic Association on September 19, 1922. The reports of results obtained by Price and Stewart were the forerunners of numerous cases which have since been successfully treated. At present there are reports of a goodly number of cases treated and the percentage of recoveries is very encouraging as compared with that of other methods. It is believed, from the records reported, that the mortality records will be lowered when the method is applied regularly in the first and second stages.

The following report of cases has been taken from Stewart's[8] records and by the courtesy of Lieutenant Commander Charles S. Stephenson, M.C.,

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* Pneumonia. Byron Sprague Price, M.D., American Journal of Electrotherapeutics and Radiology, September, 1916, p. 445.

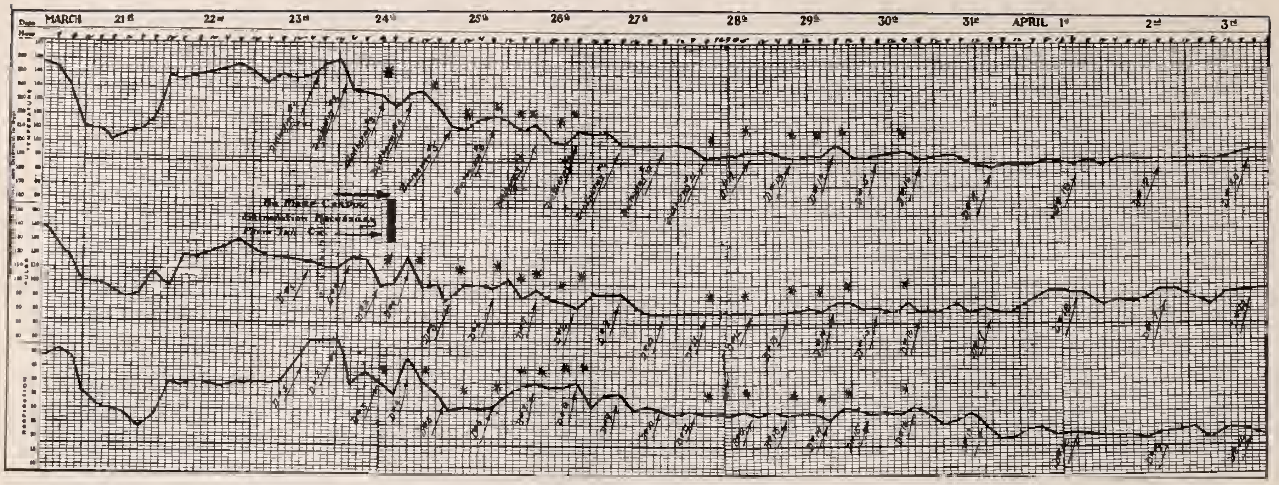

Chart of patient H. B. K., from first days of diathermy treatment to end of treatment. D, diathermy; *, Thermolite.

U.S.N., of sixty-four cases treated to date at the U. S. Naval Hospital, Borough of Brooklyn, New York.

The success has been so well established that Commander Stephenson states that, if he were in command of a hospital, failure to employ diathermy in every case of pneumonia would be considered by him cause for court-martial. Commander Stephenson was to have reported these cases before another society tonight, whose meeting has been postponed, but by courtesy I am permitted to report them as of a later date when published.

The following summary of cases reported will indicate the present status of the method from cases already treated:

SUMMARY OF CASES REPORTED

	Treated	Recovered	Died	Resolved by Lysis	Per Cent
U. S. Marine Hosp. No. 21, New York..	36	29	7	36	.80 3/15
Other cases reported by Dr. Stewart.........	12	10	2	....	.83 1/3
Cases treated by Dr. Broeser	31	30	1	30	.96 3/4
Cases treated U. S. Naval Hospital, Brooklyn	64	57	7	Not Stated	.89 1/16
Total	143	126	17	66	.88 1/9

CONTROLS REPORTED TREATED BY OTHER METHODS

	No.	Recovered	Died	Per Cent
U. S. Marine Hosp. No. 21, New York..	21	12	9	.57 1/7

Of seven cases reported at U. S. Naval Hospital, New York, who died, 1 came in moribund, 1 died of ruptured aortic eneurism, 2 had complicating pericarditis with effusion, 1 had but one treatment, 1 had empyema, 1 had abscess of lung, T.B.

Of sixty-three cases of which records are reported, 1 began treatment on the second day, 28 on the third day, 11 on the fourth, 13 on the sixth and 6 on the seventh.

Of sixty-seven cases reported, 15 were of type IV, 13 of type III, 3 of type II and 4 of type I. The others were undetermined.

The following case previously reported will illustrate most of the pertinent points of technic, and the progress of a case under treatment:

Dr. H. B. K., dentist, a transient in the city, was taken suddenly ill at a hotel Sunday evening, March 18, 1923. He was seen Sunday afternoon by the house physician who pronounced it to be a case of grippe with malaise and pains in the lower back with slight cough. Monday afternoon there developed in the patient a temperature of 104° F. with pain in the side, when a diagnosis of pneumonia was made by the house physician. This was on March 19.

The temperature, pulse and respiration from the 20th to the 23rd were continuously high, the temperature ranging from 103° to 106° F., the pulse from 112 to 140, and the respirations from 35 to 60.

On the morning of March 23 I was called on by friends of the patient and requested to assist in the treatment of the case with diathermy. The patient's condition was otherwise considered to be hopeless. With the consent of the physician in charge we began the treatment. The apparatus was installed and on March 23 the first treatment was instituted by my son, whom I delegated to take charge of the case.

The patient was first seen in consultation with the hotel physician on the evening that treatment was instituted. At this time he was suffering from a case of type III pneumonia in the fifth day.

There was consolidation of the entire right lung and the lower lobe of the left lung. The patient was cyanotic, receiving inhalations of oxygen every half hour for ten minutes, and regularly digitalis and camphor in oil for stimulation. His temperature was then 104.2° F., pulse 120 and respiration 40.

The first treatment was given at 6 p. m. for twenty-five minutes, 1500 ma. with electrodes four and a half by seven inches, laterally through the posterior cardiac space. At 8 p. m. the temperature was 105.6°, pulse 112, respiration 60. At 12 p. m. the temperature was 106°, pulse 112, respiration 60.

March 24, sixth day, the treatment was administered at 4 a. m. as on the previous evening. After treatment temperature was 104°, pulse 116, respiration 40. At 8 a. m. temperature was 104.8°, pulse

116, respiration 48. At 12 m., temperature was 103.6°, pulse 98, respiration 40.

Third treatment at 12 m. Same technic but prolonged to forty-five minutes. At 4 p. m. temperature was 102.6°, pulse 100, respiration 36.

The patient was complaining of severe pleuritic pain, and instructions were given to get a therapeutic lamp (a Thermolite) and apply the reflected incandescent rays over the painful areas for at least one hour at a time or continuously, if necessary.

At 6 p. m. the fourth treatment was administered for forty-five minutes. At 8 p. m. temperature was 103.6°, pulse 120, respiration 48. At 12 p. m. temperature was 102°, pulse 98, respiration 40.

March 25, seventh day. At 4 p. m. temperature was 102.6°, pulse 100, respiration 36. Pleuritic pains were greatly moderated and the quality of the pulse was greatly improved. Treatments from this time were given for one hour each. At 8 a. m. temperature was 101.1°, pulse 90, respiration 30. At 12 m. temperature was 101°, pulse 100, respiration 32. At 4 p. m. temperature was 101.4°, pulse 101, respiration 30.

At 7 p. m. treatment was given anterioposteriorly through the base of the right lung for one hour. At 8 p. m. temperature was 102°, pulse 98, respiration 32. At 12 p. m. temperature was 101.8°, pulse 104, respiration 36.

March 26, eighth day in bed. At 4 a. m. temperature 101°, pulse 90, respiration 40.

From noon, March 25, or after the fourth treatment with diathermy, no cardiac stimulants were given. This was undoubtedly due in part to the administration of reflected incandescent light, which has been demonstrated to produce remarkable reflex clinical effects upon the cardiac centres in pneumonia and other depressed cardiac conditions.

On March 29 at 8 a. m. the patient had fluid at both cases, which was completely dissipated by two diathermy treatments. From this point on, the patient made an uneventful recovery, two diathermy treatments being given daily over different parts of the chest as indicated.

On April 2, the patient felt well, but complained of a husky voice. One diathermy treatment anterioposteriorly through the larynx cleared this up.

The patient was discharged on April 3. The temperature was 98.6°, pulse 80, respiration 24.

CONCLUSIONS

1. Diathermy properly administered has demonstrated its value in the treatment of pneumonia. It is always a synergist, never an antagonist, to other measures employed.

2. Reflected radiant light and heat as a congenor in a case of cardiac weakness is a valuable means of strengthening the heart's action.

3. The established value of diathermy in the treatment of infections has won its place as an indicated measure in the treatment of pneumonia because the heat is transmitted through the body with perfect safety and already with a favorable clinical showing.

4. In all other acute pulmonary conditions and early phthisis it plays an important rôle in accord with the effects of heat in conditions of infection.

BIBLIOGRAPHY

1. Torbett and Williams: Reflected Light in Pneumonia, Am. Jour. Electro. and Rad. Apr., 1921, p. 160.
2. Sternberg:: Manual of Bacteriology, Ed. 1903, p. 303.
3. Hiss and Zinsser: Textbook of Bacteriology, Ed. 1916, p. 359.
4. Ibid., p. 355.
5. Ibid., p. 355.
6. Discussion of Dr. H. E. Stewart's Report. Am. Jour. Electro. and Rad., Oct., 1922, p. 327.
7. Diathermy in Pneumonia, Report of Ten Cases. Am. Jour. Electro and Rad. Oct.,, 1922, p. 834.
8. Stewart, H. E.: Diathermy and its Application to Pneumonia, Ed. 1923, pp. 164-176.
9. Snow, W. B.: Treatment of Pneumonia by Diathermy, Med. Jour. and Rec., May 6, 1925.

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USE OF PHYSIOTHERAPY IN GENERAL SURGERY

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It was only a few years ago that the regular medical profession considered the use of physiotherapeutic measures in the treatment of disease as entirely irregular. This was largely due to two factors. First, the average doctor is conservative and unwilling to accept anything which is not at least partially proven; second, this type of treatment had fallen into the hands of irregulars who used it and abused it. However, the regulars began to see the results these men were getting, even though their success may be regarded only as fortunate. As a result physiotherapy is now coming into its own and many of its measures have reached a point where their value can no longer be doubted.

It is not the purpose of this paper to go deeply into the physics, the physiology, the volumes of data supporting the general subject, or the specific technic of administration. For one so interested, standard text books only can give that information satisfactorily. My purpose is to only point out the indications of physiotherapy particularly to the surgeon, and along with this give sufficient data for at least a tolerance of the subject. Furthermore, I will not discuss every claim for physiotherapy, but only those which I feel have brought worthwhile results in my practice.

In the start it must be understood that the modalities are not cure-alls. It must further be understood that our old medical and surgical practices have not been antiquated by this new form of treatment. In other words, we have one more weapon for use, and because of this I advocate using all our old medical and surgical agencies, and the use of physiotherapy in addition. In doing this I find a much quicker cure and a more satisfactory one.

Three modalities only will be considered in this paper: (1) Quartz light, (2) radiation, (3) diathermy. This is done because they are more generally supported by the many writers on the subject and because they have proven to be the most useful in my experience.

QUARTZ LIGHT

The employment of quartz light means the use of ultraviolet ray. This is not a new thing in medicine. As early as 1877 Dounes and Blunt[1] first attracted attention to the fact that sunlight had the power of killing putrefactive bacteria. We now know that this property is inherent in the ultraviolet ray of the spectrum. In 1894 Finsen, Hoppe-Seyler and D'Arsonval[1] demonstrated the absorptive power of the blood for ultraviolet ray. The mercury quartz burner, by Nagleschmidt,[1] the studies of Rollier,[1] the work of Kroymayer,[1] and others, all add volumes to the data on artificial sunlight. We will group this form of therapy under three headings: (1) Preoperative, (2) postoperative, (3) nonoperative.

Preoperative. Under this heading several things are of the greatest importance. First, there is the sterilization of an operative field with ultraviolet light. There is no greater proof of this than to smear a surface with pus, take a culture of it, and then expose the area to quartz light, and finally take a second culture. The second culture tube when incubated will be found to be sterile, showing that after exposure the surface is sterilized. Eidenow's[2] paper adds some very valuable statistics on this point. It is further alleged that the tanning effect of the skin produces an immunity and a resistance to stitch infections of the skin and all infections postoperatively.

Second, the stimulating, building-up effect of quartz light is a very good aid in making the patient ready for operation. Blood counts taken before the treatment and after show a gradual rise in not only the hemoglobin, but the red cells as well, proving the effect on anemia. The following case reports show this:

D. R., age 46, operated on for ovarian cyst, showed a hemoglobin and red cell count of 75 per cent and 3,890,000 respectively. Eighteen exposures to ultraviolet light brought the count to 87 per cent hemoglobin and 4,905,000 reds.

L. W., age 48, operated on for hernia, after twenty-four exposures to ultraviolet light brought his blood count from 65 per cent hemoglobin and 3,225,000 reds, to 85 per cent hemoglobin and 4,950,000 reds.

M. R., age 54, hemoglobin of 50 per cent, reds 3,850,000 after exposures showed 80 per cent and 4,878,000 reds.

Donnelly[3] states that there is a general toning up of the nervous system following the use of quartz light. I feel there is no greater proof of this than when a patient tells one he feels much peppier, or he now wakes up and finds that after a night's sleep he feels perfectly rested.

In adenitis and furunclosis often times, if properly administered, there is an abortion of the process, according to Sampson.[4] When this is not actually accomplished, there at least is a localization of the pus and a sterilization of the part. I have found that, by using radiation along with quartz light, many cases of adenitis subside before the gland breaks down and pours pus into the surrounding tissues. The accompanying chart presents cases of this type, where there has been no breaking down of the glands and no extravasation of the pus in tissues.

RADIATION AND ULTRAVIOLET RAY TREATMENT OF INFLAMED LYMPH GLANDS

Case	Type	No. of Exposures	Glands	Pain and Tenderness
1	Cervical	4	Reduced size	Disappeared
2	Cervical	24	Enlarged size	Disappeared
3	Axillary	6	Reduced size	Disappeared
4	Inguinal	6	Reduced size	Disappeared
5	Inguinal	3	Reduced size	Disappeared
6	Cervical	15	Reduced some	Disappeared

Postoperative. Under this category, I feel that a great deal is accomplished with ultraviolet light. The building-up effect of tonic doses following operation is just as effective as it is before operation.

ULTRAVIOLET TREATMENT FOLLOWING OPERATION

	Before		After	
Case	Hemoglobin Per cent	Reds	Hemoglobin Per cent	Reds
1	70	3,800,000	90	5,000,000
2	45	3,000,000	85	4,800,000
3	65	3,400,000	85	4,950,000
4	70	4,250,000	95	5,300,000
5	70	4,000,000	100	5,650,000
6	60	3,850,000	90	5,000,000

Furthermore, the bacteriocidal effect and the stimulating reaction to postoperative infections, sinuses, fistulas, osteomyelitis, adenitis, furunculosis are most gratifying. Chesney[5] states, as do Donnelly[3] and Sampson,[4] that ultraviolet light destroys bacteria, breaks down bacterial toxins, accelerates elimination and eases pain. These factors all help to accelerate the healing of such processes. In fact, wherever there is infection and drainage, ultraviolet light tends to accelerate the return to normal. Often times, following a hemorrhoid operation either by knife or diathermy, ultraviolet light tends to coagulate any remaining vein which has not been removed. Sampson[4] states that it relieves pain following operations on hemorrhoids.

Nonoperative. It is in this class that falls intestinal tuberculosis. Here quartz light may be considered specific. Such a man as Rollier[6] states that in three hundred cases of intestinal tuberculosis he has never had to resort to operation. Mayer[7] reports eighty-one cases of intestinal tuberculosis, in which 85.2 per cent showed improvement. Koven[8] states that artificial light will prove to be one of the greatest helps in prevention of bone deformities. Ernst[9] reports 83 per cent recoveries in uncomplicated tuberculosis bone cases. Plank[10] states marvelous results in chronic ulcers, leg ulcers, etc., treated with quartz light.

In severe and hopeless burns Sampson[4] states, "I fully realize that this treatment is a radical departure from that usually used, but you have nothing to lose and everything to gain by trying it. Arguments would avail nothing and will not be needed after you use it a few times." Blanching and reducing of scars can also be accomplished with artificial sunlight. Donnelly[3] advocates ultraviolet energy to increase chemical action of blood in the part of traumatic conditions, such as fractures, bruises, tendons, periosteum, bone, etc. This, in conjunction with radiation and diathermy, I find a very valuable treatment for fractures, bruises and the like.

RADIATION

This type of modality employs the use of the infrared ray. It was discovered about the same time as the ultraviolet ray. However, its therapeutic use has only been brought out and understood recently. It is claimed that infrared penetrates the deeper structures better than ultraviolet. It is not bacteriocidal, only indirectly stimulating phagocytosis. Furthermore, it is supposed to aid absorption of exudates and increase red and white cells of the blood. It produces great heat by resistance in the tissues, and reduces pain materially. With these things in mind, radiation is used for a variety of conditions.

In fractures and bruises radiation is employed. I use it in conjunction with ultraviolet light and dithermy and find a very quick relief from pain and a marked diminution in the swelling. Stiffness and loss of function promptly disappear. I feel that radiation and diathermy produce a sedative effect, promote absorption of exudates and help phagocytosis, whereas the ultraviolet light follows up with a general stimulation.

Radiation is also useful in the treatment of burns. It promptly reduces the pain incident to this type of lesion. It also promotes healing and epidermalization. In sunburns I find it of particular use. I use it routinely on all such cases and those cases where ultraviolet ray has produced a burn, and find that from two to twelve hours later the pain, burning, itching or stinging has entirely disappeared.

RADIATION TREATMENT OF SUNBURN

Case	Exposure	Relief from Pain	Hours Before Relief
1	2	Complete	24
2	1	Complete	4
3	1	Complete	2
4	1	Complete	12
5	2	Complete	18
6	1	Complete	8

In gynecology radiation is used in conjunction with diathermy. In colics a relaxation of tissues and a diminution of pain is promptly noted. Ulcers are stimulated and anemia is improved by this means.

In adenitis and furunculosis I find radiation of special use. To localize infection and to reduce the inflammation and size of lymph glands it is very valuable. If kept up for the proper length of time and in conjunction with quartz light locally applied, when the boil or area is finally evacuated of pus, the latter is practically sterile and the part heals promptly. Instead of draining pus for days, the part heals promptly, often in as short a time as two days. The accompanying chart shows the record of several such cases.

INFECTION TREATED WITH ULTRAVIOLET LIGHT AND RADIATION

Case	Exposure	Localized	Drainage Time in Days	Healing Time
Hand	3	Yes	2	5 days
Hand	4	Yes	4	10 days
Leg	3	Yes	3	8 days
Finger	2	Yes	2	3 days
Face	2	Yes	3	5 days

Patients with sprained backs, with lumbar osteoarthritis and allied conditions are afforded relief with radiation. When used in conjunction with diathermy, patients often tell one that more marked relief from pain is noticed following radiation than from a diathermy treatment. As far as actual results are concerned, I am not prepared at this time to say whether either radiation or diathermy gives a permanent result.

DIATHERMY

Perhaps no other form of physiotherapy is more widely accepted or more often written upon than is diathermy. By way of explanation it is the application to the body of an electric high frequency current, which generates heat in the tissues between two electrodes. The degree of heat is controlled by the size of the electrodes, the amount of current utilized, the duration of the application and the density of the tissues treated. The depth of heat penetration can readily be regulated by varying the size of the electrodes. When electrodes of varying size are employed, the greatest degree of heat will be nearest the smaller electrode, so that to obtain heat equidistant from the two electrodes, those of equal size must be used. Surgical diathermy, electrocoagulation or desiccation refer to the destruction of tissue by utilizing high degrees of temperatures. This may be brought about by using two electrodes or by one electrode, using the Oudin current. This destructive means is used in destroying new growths, inflamed structures, etc.

Diathermy is used in a variety of conditions. In gallbladder disease, gastric ulcer, kidney stone and other conditions where a patient refuses to be operated on, diathermy can be used as a substitute. This treatment in no sense is a cure, but it relieves pain, hyperacidity and causes a relaxation of the part, so that the patient is made more comfortable.

Crile[11] advocates its use during operations, where the heat of the liver is required to be raised. He says it prevents shock and other postoperative complications, and for that reason is valuable in bad operative risks. Sampson[4] advocates diathermy in treatment of fractures and bruises. He says there is a complete muscle relaxation following diathermy, swelling is reduced by absorption of the exudate, pain is relieved, fibrosis prevented, and nonunion minimized. Clarke[12] advocates desiccation as the proper means of removing hemorrhoids. Mackay[13] uses fulguration in bladder papillomata, as do Wyeth[14] and Milligen[15] in certain forms of surface carcinoma and other surface tumors.

However, the greatest contribution of diathermy in my opinion is that which it affords in pelvic inflammation. In this day and age, when surgeons are concentrating their attention on saving organs wherever they can rather than removing them, diathermy steps in and offers much. Cherry[16] states that he has seen large pus tubes just melt away under the influence of diathermy current. Davis[17] treats endocervicitis with the cautery, whereas Willmoth[18] advocates diathermy in gonorrheal cervicitis. Even French authors, such as Flandrin and Schil,[19] comment favorably on this form of treatment in pelvic inflammations. My experience likewise has been very gratifying in inflammations. However, where there is an accumulation of pus, I still adhere to surgical procedure of drainage and use diathermy only as a substitute or as an adjunct.

CONCLUSIONS

1. Physiotherapy is a valuable aid to the surgeon.
2. It is not a "cure all."

BIBLIOGRAPHY

1. Dounes and Blunt, Finsen, Hoppe-Seyler, D'Arsonval, Nagleschmidt, Rollier, and Kromayer: Quoted from Freund's book on Phototherapy.
2. Eidenow, Albert: The Bactericidal Effect of Ultraviolet Ray. Brit. Jo. Rd. Jan., 1926.
3. Donnelly: Ultraviolet Energy in Surgery. Am. J. Phys. Ther. Jan., 1925.
4. Sampson, C. M.: A Practice of Physiotherapy. 1926.
5. Chesney, W. D.: Some Infections and Ultraviolet Light. Burdick Bulletin, No. 307.
6. Rollier: Quoted by Warnshius. Ultraviolet Radiation and the Treatment of Diseases.
7. Mayer, Edgar: J. A. M. A. June, 1924.
8. Koven: Statement before Am. Med. Assoc. Meeting. Dallas, Texas, 1926.
9. Ernst, N. P.: Quoted by Henry Schmitz. Rad. J. Rad. Soc. N. A., 1924.
10. Plank, T. H.: Chronic Ulcers and Their Treatment. Seventh Annual Convention Central Phys. Assoc., 1924.
11. Crile, E. W.: Use of Diathermy and Quartz Light for Conserving Temperature of Viscera and Promoting Well Being of Patient Before and After Abdominal Operations. S. G. and O., Feb., 1926.
12. Clarke, W. L.: Hemorrhoid, Anal Fissures, Special Reference to Desiccation Treatment. A. J. Elec. Thera. and Rad., 1926.
13. Mackay, A. E.: Personal Communication.
14. Wyeth, G. A.: Endothermy the New Surgery as Applied to Epidermoid Carcinoma. Bos. Med. and Surg. J. Oct., 1924.
15. Millagen, Sir W.: Radiothermy in Treatment of Inoperable Malignant Diseases of the Upper Air and Food Passages. Brit. M. J., 1926.
16. Cherry, T. H.: Results of Diathermy in Pelvic Infections. J. A. M. A. June, 1926.
17 Davis, C. H.: Cautery Treatment of Chronic Endocervicitis. J. A. M. A. June, 1926.
18. Willmoth, A. D.: Practical Physiotherapy in Gynecology. Med. Her. and Phys. Apr., 1925.
19. Flandrin, P. and Schil, L.: Surgical Diathermy in Metritis: Presse Medicale, Paris, Apr., 1926.

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SCARLET FEVER STREPTOCOCCUS ANTITOXIN

TREATMENT OF SCARLET FEVER CASES

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In studying a series of some 100 scarlet fever cases treated with scarlet fever streptococcus antitoxin since September, 1925, in the Seattle City Isolation Hospital, and comparing with a series of a like number of cases admitted during that time but receiving no antitoxin, some interesting observations have been made. Knowing that statistics, particularly in a small series of 100 cases, are notoriously fallible, they have, nevertheless, been computed in several charts shown, and form a basis of favorable results recorded from this treatment.

One cannot record the critical change noted clinically in this manner, the spectacular fading of the rash, subsiding of the acute pharyngitis, fall in temperature and prompt symptomatic improvement noted in acutely ill severe scarlet fever cases treated early with the antitoxin. These observations have been reported by various men using the antitoxin sera, and our experience is that these results are consistently obtained.[1]

The newer conception of scarlet fever, based upon the investigations of Drs. Dick and Dick, and others, holds that it is a toxemia. The organism, the hemolytic streptococcus, growing on the mucous membrane of the pharynx usually, excretes a soluble toxin which is absorbed, and causes the characteristic symptoms and signs of the disease. When there is a sufficient amount of antitoxin present in the blood stream to neutralize the toxin, the symptoms subside. This is accomplished slowly by antitoxin produced within the body, or rapidly by antitoxic serum injected intramuscularly.[2] Clinical observation of cases treated bears out these concepts.

There are undoubtedly many cases which early become complicated by local or general invasion of the body by the causal or other organisms, where the results are less spectacular. It is believed, however, that the neutralization of the primary toxemia, if accomplished early, will go far to prevent later secondary invasions; and further is important in unmasking complications already present.

Our experience would indicate that the use of scarlet fever streptococcus antitoxin is indicated in nearly as large a percentage of cases as is diphtheria antitoxin. The disease, scarlet fever, as seen in this climate, is not usually as serious; i.e., has a lower mortality than diphtheria. The complications are always serious, however, and are probably the cause of many of the infirmities of later adult life (as kidney trouble, deafness, etc.). The great need is, as with diphtheria antitoxin, that it be administered early, and in sufficient dosage at that time. Further study of the charts brings out in more detail these contentions and their statistical basis.

CHART 1.

Showing average length of time after onset when temperature became normal.

Untreated cases	Number	Average time temperature became normal
Mild	61	7.6 days
Mod. Severe	23	11.0 days
Severe	6	18.2 days
Totals	90	8.9 days

Treated cases	Number	Average time temperature became normal
Mild	25	6.7 days
Mod. Severe	60	8.75 days
Severe	16	11.4 days
Totals	101	8.9 days

Cases were classified in this and in following charts as follows:

1. *Mild.* Temperature on admission usually 100° or less. Symptoms, headache, pharyngitis, etc., of toxemia very slight or none. No apparent complications.

2. *Moderately severe.* Temperature 100° to 102° usually. Symptoms present but patient not extremely toxic and complications, if present, not apparently serious.

3. *Severe.* Temperature over 102°, usually with marked toxemia or serious complications.

4. *Convalescing.* Duration of disease over one week, rash faded, temperature not elevated and no serious complications present.

Chart 1 shows an average return of temperature to normal (99 adults and 99.4 children for at least two consecutive days) in all patients in as short a time in treated as in untreated cases. The moderately severe and severe cases represented only one-third of the total untreated cases and three-fourths of the treated cases. In cases of a similar degree of severity the febrile course was distinctly shortened.

CHART 2.

Complications. Untreated cases	No. of cases	No. of complications	Percentage of complications
Mild	61	12	19.6
Mod. Severe	23	6	26.0
Severe	6	7	116.6
Convalescing	17	0	0.0
Total	107	25	23.3
Treated cases	No. of cases	No. of complications	Percentage of complications
Mild	25	2	8.0
Mod. Severe	60	8	13.3
Severe	16	8	50.0
Total	101	18	18.0

This chart shows an apparent lessening of complications among treated as compared with untreated cases. Not only is the percentage lessened in each group but the total number of complications among treated are fewer than among the untreated.

These complications were distributed as follows:

CHART 3.

Untreated cases	Mild	Mod. Severe	Severe	Totals
Adenitis	5	3	1	9
Arthritis	2	0	1	3
Catarrhal otitis media	1	0	0	1
Purulent otitis media	1	1	2	4
Mastoid	0	0	1	1
Nephritis	0	1	0	1
Pyelitis	1	0	0	1
Persistent hyperpyrexia	2	1	0	3
Septicemia	0	0	1	1
Thrombophlebitis	0	0	1	1
Totals	12	6	7	25
Deaths	0	0	2	2

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[1] Dick and Dick, J. A. M. A., Vol. 84, No. 12, March 4, 1925; Blake, Trask and Lynch, J. A. M. A., Vol. 82, No. 9, March 1, 1924.

[2] Dochez, J. A. M. A., Vol. 82, No. 7, Feb. 16, 1924; Zingher, Internat. Clin., Vol. III, September, 1924.

Treated cases	Mild	Mod. Severe	Severe	Totals
Adenitis	1	4	2	7
Arthritis	1	0	1	2
Catarrhal otitis media	0	2	0	2
Purulent otitis media	0	1	3	4
Mastoid	0	0	1	1
Nephritis	0	1	1	2
Pyelitis	0	0	0	0
Persistent hyperpyrexia	0	0	0	0
Septicemia	0	0	0	0
Thrombophlebitis	0	0	0	0
Totals	2	8	8	18
Deaths	0	0	0	0

The complications recorded are those occurring following the acute first stage of the disease. It is noted that the number of serious complications, as nephritis, otitis media and mastoid, is practically the same in the two series. When it is considered that the large majority of treated cases fall in the moderately severe and severe class, where the percentage of complications is considerably higher in the untreated cases, it would seem that these complications had been decidedly reduced.

The occurrence of two deaths among the untreated against no deaths among the treated speaks favorably. Here, again, the series is too short to be conclusive, but it suggests that, if one or two deaths out of a hundred or more cases might be prevented, the use of antitoxin in all acute cases is justified.

The results as noted by chart 4 show very definitely that the time after the onset of the administration of the antitoxin influences both the course of the disease and the percentage of complications.

Points of particular interest in chart 5 are the markedly greater percentage of antitoxin reactions noted in cases treated with the unconcentrated serum, and the difference in results with cases treated with Dochez and Dicks' serum.

The Dochez serum used was the Lilly package of 5 c.c. Each c.c. is marked "to neutralize 30 to 50,000 skin test doses of toxin."

The Dicks' serum is supplied by Squibbs. The package is 12 to 14 c.c. and each c.c. is marked "to neutralize at least 25,000 skin test doses." The average package of 5 c.c. Dochez serum probably neutralizes about 200,000 skin test doses of toxin, whereas the Dicks' serum neutralizes 300,000 skin test doses.

The cases given 10 c.c. of Dochez serum were either severe cases or cases seen late in the disease. Several cases had 10 c.c. in divided doses, which is recognized poor technic in the administration of diphtheria antitoxin (the full dose should be given at the first injection). These facts probably account for the unexpected discrepancy between the results with larger and smaller doses of Dochez serum.

The results with Dicks' serum are apparently better. This is probably due to the fact that the larger dose is given at the first injection. The Dochez serum is alleged to have antibacterial properties as well as a measured antitoxin content. Blake and Trask are of the opinion that the benefit of the serum is due largely, if not entirely, to the antitoxic content, rather than to any bacterial properties which it may possess. Our findings would indicate that this was undoubtedly true.[3]

The great value of the scarlet fever streptococcus antitoxin lies in the neutralization of the toxemia of the acute first stage of the disease. In accomplishing this it shortens the course of the disease and lessens complications. It aids the body in ridding itself of the infecting organisms, and prevents further invasion, if given early enough. If a bacteremia or septicemia is already present, the neutralization of the toxemia unmasks the complication and, further, probably aids the organism in overcoming it.

CHART 4.

Results in cases treated at various stages of the disease.

			COMPLICATIONS							
Day of disease treated	No.	Temp. became normal day	Adenitis	Catarrhal otitis media	Purulent otitis media	Mastoid	Nephritis	Arthritis	Total No.	Per cent
First day	4	5.0	0	0	0	0	0	0	0	0.0
Second day	21	6.24	1	0	0	0	1	1	3	14.3
Third day	27	9.22	0	1	1	0	1	0	3	11.1
Fourth day	32	8.52	4	0	2	0	0	1	7	22.5
Fifth day	8	10.0	1	0	0	0	0	0	1	12.5
Sixth day	5	10.8	1	1	0	0	0	0	2	40.0
Seventh day or longer	3	14.3	0	0	1	1	0	0	2	66.0
Day not known	1	12.0	0	0	0	0	0	0	0	

CHART 5.

Results with various types of antitoxin.

	No. of Cases	Day temp. became normal	Antitoxin reactions No.	Antitoxin reactions Per cent	Adenitis	Catarrhal otitis media	Purulent otitis media	Mastoid	Nephritis	Arthritis	Total No.	Per cent
Unconcentrated Dochez	4	10.5	2	50	1	0	0	0	0	0	1	20.0
Concentrated Dochez 5 c.c.	43	8.5	7	16	3	1	0	0	1	1	6	13.9
Concentrated Dochez 10 c.c.	10	10.0	1	10	2	0	2	1	1	0	6	40.0
Dicks' 10 to 14 c.c.	41	7.53	5	12	1	1	2	0	0	1	5	12.2

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[3] Blake and Trask, N. Y. State Jour. Med., Vol. 25, No. 25, Dec. 15, 1925.

THE VALUE OF BUTTER IN THE DIET*

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In spite of the large amount of research that has been done on milk and milk products, much misinformation is extant regarding the proper place of butter fat in the human diet. The most highly civilized peoples have for centuries used butter and other animal fats as foods. Recently vegetable fats have been introduced into these same countries, recommended and advertised as adequate butter substitutes. Some of these have even been given a skim milk bath so as to simulate closely the flavor of butter. Their cheaper price has made a strong appeal. Their caloric or energy value is similar to butter; their appearance and taste are not objectionable.

Is such a butter substitute a wolf in sheep's clothing or can it rightfully replace butter? We can hardly expect an unbiased answer from the interested parties on either side. Mothers, nurses, doctors and conscientious grocers wish to know the truth for the children's sake. Commercially disinterested research laboratories, such as those found in our state institutions, are the natural places to secure the desired information.

At the University of Oregon Medical School dietary studies have been conducted on the growth-promoting and health-giving values of butter fat as compared with vegetable fats. These tests were made first on rats and later on the more expensive experimental animals, puppies. The results were so similar that for the sake of brevity only the latter will be given in detail.

A donated litter of half breed English bull pups was used for this test. These animals were fed by their mother until they were three weeks old, at which time eight of the litter of nine were taken to the laboratory. They were fed on a good general diet for five weeks or until strong and well developed. The litter was then divided into two groups. The four larger and healthier dogs were placed in the so-called "test" or experimental group and the other four in a "control" group.

The diets fed to both groups were chemically and calorically identical, i.e., each diet contained the same percentage of protein, carbohydrate, fat and mineral salts. A measured amount of skim milk whey was given to each animal. This amount was several times what could posibly be found in a vegetable fat churned up with skim milk. The only difference in the diets consisted in the kind of fat used. The "control" puppies' food contained 15 per cent of butter fat, while the "test" animals received 15 per cent of a certain vegetable fat now used in many homes.

The results were startling. As shown in fig. 1, the puppies receiving butter gained an average of thirty pounds in less than two months. Also they were in perfect health. Those receiving the vegetable fat averaged a gain of only seventeen pounds. One of these died of pneumonia on the 56th day, and the others were weak and sickly looking, an easy prey to disease germs.

FIG. 1

ECONOMY OF AN ADEQUATE DIET

	Average Weight		*Increase*
	Start Lbs.	Finish Lbs.	Lbs.
Control dogs	15.64	46.37	30.73
Test dogs	15.77	32.97	17.20
Difference			13.55 or 78 per cent

On a diet containing butter fat instead of a vegetable fat, 5 per cent greater food intake produced 78 per cent greater gain in weight.

X-ray pictures of the bones of both rats and puppies on the above diets show that the animals receiving the vegetable fats have poorly calcified, more transparent bones. The teeth are also poorly enameled. Bone fractures occur more easily, knock knees or bow legs and flat feet are common results. These conditions are now receiving further clinical and experimental study.

Leaving the health question out of consideration, is a proper diet more expensive? To answer this question careful computations were made of the food consumed. Each dog's dish was carefully weighed before and after each meal. As the various articles of food were thoroughly worked into one mixture, the caloric value of which was known, it was possible to determine the food intake of each animal. It was found that 15 calories of food were consumed daily per gram of body weight by the "test" animals and 15.7 by the "controls." In other words, the dogs receiving the vegetable fat ate nearly as much food per pound of dog as did those receiving butter. The lesser gain, therefore, was not due to poor appetite and consequent insufficient intake of food. The control animals consumed only 5 per cent more food per pound, yet made a 78 per cent greater gain in weight.

When we compared the gain in weight of each group with the number of calories eaten, we found that the control puppies required 30 per cent less food for each pound gained than did the others.

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* Read before Central Oregon Medical Society, Bend, Ore., May 17, 1926.

Upon this basis, in order to make an equal gain, the test dogs would have been compelled to eat 2.2 times as much food as the "controls." By the same token a pound of butter should be worth at least 2.2 times as much as a pound of vegetable fat. Nor does this estimate include the cost of the other food that would have to be given with the butter substitutes.

FIG. 2

GAIN IN WEIGHT COMPARED TO FOOD EATEN

	Controls	*Test*
	Calories (233 days)	Calories (229 days)
1. Calories consumed daily........	528.5	425.5
2. Daily per kilogram of initial weight..	73.5	59.4
3. Per gram net gain....................	9.5	12.32

For every gram gained the test puppies consumed 30 per cent more calories than the control.

In clinical practice in home and hospital, among the sick and among the well, we often meet this same problem. Children may consume a sufficient amount of food, yet fail to gain in weight or improve in strength and disposition because the diet lacks a proper proportion of some essential constituent.

SUMMARY

1. Butter contains some substance not found in vegetable fats which is essential to the growth and well being of omniverous animals.

2. When vegetable fats are substituted for butter in the diet of rats and puppies, their growth is stunted.

3. A litter of eight puppies, divided into two groups and fed diets differing only in the kind of fat used, demonstrated the economic loss sustained when a vegetable fat replaced butter.

4. A 5 per cent greater intake of food in the butter group resulted in a 78 per cent greater gain in weight.

5. Vegetable fats cause a deficiency in calcification, resulting in greater fragility of the bones together with increased transparency to the roentgen ray.

6. These experiments demonstrate that, when vegetable fats are substituted for butter, ill-health and premature death occur.

7. Clinical experience indicates that children respond in a similar manner. Children's diets, therefore, deserve serious consideration at all times.

LOCAL ANESTHESIA

AN ARMAMENTARIUM AND NOTES OF ITS USE

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The following memorandum is published in response to a call from many sources for a handy list of articles used in our local anesthesia technic and practical points in their use.

The introduction of asepsis and general anesthesia were undoubtedly the greatest achievements in the glorious history of medicine and surgery. By these developments a tremendous impetus was given to the activities of our progressive profession. A vast field for research was opened and the hitherto impossible was rendered easy of accomplishment. Undoubtedly the factor of greatest importance in this conection was the reduction in operative mortality.

We shudder when we read of operations performed in the preaseptic and preanesthetic era—and rejoice over the marvels of the day. In spite of the success of general anesthesia in competent hands, it still has many disadvantages. These are too well known to dwell upon in this brief sketch. With the introduction of local anesthesia, practically all the dangers of narcosis have been relegated to history.

It is a most inspiring sight to visit many of the large European clinics and note the great strides they have made in the art of local and regional anesthesia. In some institutions local has almost supplanted general anesthesia. At other clinics its use has not extended quite this far, but it is everywhere notably on the increase. In urologic surgery its use is particularly emphasized by Illyes of Budapest, who rarely resorts to narcosis. In America, while it has not made great headway, it is becoming more and more in vogue. We believe that it is only a question of time when its employment here will be equal to that of Europe.

In our experience covering many years, the writer has used local anesthesia in over three thousand cases, in practically every part of the body. In the last few years we have been particularly interested in its use in urologic surgery. In no other part of the anatomy is its value so strikingly apparent. The reduction in the operative mortality rate is little short of marvelous. No less striking is its use in the surgery of the thyroid gland. In several large series of cases reported from various clinics, there were no operative mortalities. The writer has recently reported one hundred consecutive bladder operations, without a single operative death. This is, we believe, quite a satisfactory demonstration of the possibilities of regional technic.

Some of our observations regarding needles and syringes may be of value and we shall put them down accordingly.

In the successful conduction of local anesthesia, it is necessary to have a set of syringes and needles particularly adapted to this type of work. Briefly, they should conform to the following postulates:

A. The syringe must not be too expensive.

B. The needles should be capable of easy attachment and removal, yet must not fly off or leak under heavy pressure.

C. The needle must be easily procurable in the different sizes and lengths, and must also be reasonable in price.

D. The needle if of steel should be properly annealed, be flexible, and yet not easily breakable.

E. The needle should be procurable in other metals than steel, as iridoplatinum, gold and nickeloid. The reason is obvious.

F. The syringe must have a comfortable finger rest and thumb rest or rings.

G. The plunger should not be capable of accidentally falling out or slipping forward.

H. Both syringe and needles should be readily boilable and all danger of breakage eliminated.

There are a number of syringes on the market which possess more or less the above requisites. An instrument which possesses a Luer-Lok control is well adapted for the purposes, and in addition the Luer type needles are available in every instrument house and most drug stores.

A large comfortable finger grip or thumb rings renders a syringe easily controlled and will not permit it to fall from the hand. It is also necessary at times to move the syringe rapidly from one position to another. It must be remembered also that it is quite necessary that novocaine or other solutions used for local anesthesia must be injected constantly in a steady but slow stream. A noncorrosive friction ring is important, as it prevents the falling out or slipping forward of the piston. This is a common fault of many instruments. Its instant withdrawal or reinsertion should not be prevented, however. This is particularly of value where novocaine is poured into the bowel.

In view of the inquiries which are frequently received as to the proper guages and lengths of needles to be used in the various procedures, we present the following suggestions. These gauges and lengths have been of value to us, and we are sure they will be helpful to others.

Operation	Gauge	Length
For raising the heal	24	¾
For injection in the wrist, ankle, scalp, finger and toe	22	1½—2
For paravertebral anesthesia	22	2½
(cervical block, dorsal block	21	2½
lumbar block). Needles with	22	3
stylet, Luer type	20	3
	20	4
	19	4
For sacral anesthesia, also called epidural and caudal block	20	3
Needles with stylet as above	19	3½
For spinal anesthesia	22	3
	20	3
Abdominal field block	22	3
	20	3
	22	4
	20	4
	19	4
Splanchnic anesthesia	19	5

(Denman type of needle)

In connection with the use of needles I must again emphasize the necessity for a strong, but properly tempered, flexible needle. Many surgeons complain of their needles rusting. Nickeloid needles will not rust. Steel needles after use should be boiled, then rinsed with either alcohol or ether and dried with the Brunet needle drier. The wire or style should be replaced, coated with oil. With these simple procedures, steel needles will last a long time.

Before closing, we should like to add a word about the capacity of the syringe. Some surgeons recommend a barrel holding from 40 to 50 c.c. We have found, however, that the 10 c.c. type is the most practical for all work, and is convenient. The 3 c.c. type is, however, well adapted for spinal anesthesia and tonsil work.

We hope the foregoing brief notes will be found of interest, as they represent the basic features of the local anesthesia armamentarium.

Local anesthesia is not a fad. It has a definite place in surgical procedure. New fields are constantly being developed for its use. Patients are at times insisting upon it. The progressive surgeon, therefore, will do well to master the technic of this extremely valuable adjunct, the art of local and regional anesthesia.

30 East 40th St.

THE RELATION OF PHYSICIAN AND PATIENT*

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COEUR D'ALENE, IDA.

Much has been written on this interesting subject by abler pens than mine, and certainly no claim to originality as to subject matter is made herewith; but I may be able to suggest a thought or two along these lines that may be of service to some of my audience in helping to clear up some of the many difficulties that beset us in establishing and maintaining the above relationship on a friendly and harmonious basis.

Some of my ideas may not meet with your approbation; the wisdom of others may be sharply questioned; but you know I am not as old as Solon nor as wise as Socrates, therefore, I am not presenting them as the "law and the prophets." Yet these ideas have been gleaned through twenty years of active experience in handling patients who have been, after all, much the same type as most of yours. Many of these ideas, exemplified in my daily life, have resulted in more successful contacts with my patients, both professionally and financially, and I think have made me more of an asset to the community in my profession. They are offered for what they are worth, not doubting that in a good old-fashioned experience meeting many of the men present would be found who have devised better methods than these.

It is unnecessary for me to discuss the professional qualifications of the physician. The state aims to take care of that feature, and we may fairly assume that in a gathering of this kind, for instance, every man present is somewhere nearly as good or better than ourselves in his qualifications to practice the healing art.

I do want to draw your attention to one thing that I consider important, however. Be a student, not only of medicine, but of the other arts and sciences. Don't be a dolt on all other subjects than medicine, even if wise in it. At least cultivate a working conversational knowledge of history, literature, music, the drama, art, flowers, philosophy, religion, your community businesses, except mining and oil, and sufficient of whatever other things you may be able to grasp, so that you may be recognized as one whose opinion may be listened to respectfully in any gathering representing a cross section of society in your district. The public expects this much of you and the honor of your profession demands it.

In this connection we only need to consider the example set for us by some of the mighty physicians of the past, whose names are yet names to conjure with, who led infinitely more busy lives in their profession than ours shall ever be, and yet found time and inclination to become almost equally eminent in the realms of literature, science, paleontology, botany, sculpture, art, comparative anatomy, geology, archeology, and indeed, all of the graces of intellectual life, frequently excelling in many of them.

Make your office as clean, light and attractive as possible, and let your office assistant be young, attractive, cheerful and friendly, yet quiet, tactful and unassuming. A patient's first impressions are gathered from these sources and are frequently unfavorable before they even see you, and these first impressions are frequently very difficult to overcome.

Don't put gruesome pictures on your walls. Rather let them be beautiful landscapes or something that suggests health, wholesomeness and happiness. Let your walls be tinted in colors that are quiet and restful, avoiding cheapness and tawdriness. Have a place for everything, if possible, and everything in its place. Let the material and arrangement of your equipment suggest utility rather than ostentation; and let the sum total of the impressions gained by your patient's first entry into your office be summed up in the thought that you are capable of doing good, careful, earnest work, and that your workshop is such that you are fully equipped to do it. Whatever may be the particular arrangement you may have chosen in these respects, if it tends to induce this conclusion in your prospective patient's mind, he enters your sanctum sanctorum in a very favorable frame of mind for you to continue and deepen the impression.

Your patient is now alone with you. What shall be your method of approach? If you have been a good student of human nature you will let him do most of the talking for a time after you have greeted him in a dignified and courteous manner. There are many types of humanity and we must at least roughly recognize most of them, if we are to establish successfully the first and most difficult contact.

Perhaps the most numerous variety is the friendly sort of fellow. Many times you can at once recognize this sort of client by the fact of his offering you his hand at once in introducing himself. He wants you to know him well, call him by his first name, and likes to get close to you in the professional relationship. Try to meet his expectations along these lines; above all, try to remember his name in the future; but remember the special peril of having close friends for your patients is that they may expect special consideration at the end of the month. I think we have always found our closest friends make the most difficult patients. Much of this can be eliminated at the outset by reserving a little bit of yourself. Be friendly, courteous and affable, but somehow contrive to leave the impression that, after all, you are not relatives but physician and patient.

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* Read before the Thirty-fourth Annual Meeting of Idaho State Medical Association, Sandpoint, Ida.

Then we have the quiet, reserved man. He is a patient who expects you to locate his trouble with little help from him, who frequently minimizes his symptoms, and who may even mislead you, though possibly without any such intent. These men are apt to be impressed by your powers of examination and deduction. If you are able to win their confidence they frequently make wonderful patients, true as steel, and lifelong friends.

Particularly among young people, nowadays, we are apt to run across the "smart Aleck" variety. They are exceedingly difficult class of patients to deal with. I don't know of any other method than to somehow create the impression that you mean business and have no time for flippancy. It may be necessary to speak sharply once in a while to bring this home to them.

Then we have the garrulous neurasthenic who would talk all day of his ailments, if you consented to listen. We all know how trying to a busy physician these people are, particularly if they happen to enter your office towards the close of a hot, busy day, when your own nerves are pretty much on edge. It will certainly be a mistake for you to undertake the care of such a case, if you are feeling "fagged" yourself, so I usually listen to him for awhile, then quietly tell him that I always commence the study of a difficult case by the examination of a twenty-four hour sample of urine. Give him careful directions how to collect it and have him return the next day, or at a more opportune time for the examination. I might say this innocent subterfuge has been very successful with me in handling any kind of a suitable case coming in when you are pressed for time. It impresses patients with your carefulness, and is really a pretty good thing to do in any case.

When they return, listen to their history, gently directing their flow of oratory so that points of value to you are elicited, then go over them very thoroughly, being very careful not to miss some organic pathology. But if you do not find any, and decide the case is a neurasthenic, don't be afraid to tell him so. You can explain that many people are really sick who present nothing that we are able to discover by any means that we possess at present; that these are cases of a bankrupt nervous system that has been checked against too heavily, and that the best and quickest relief is to be obtained by perfectly natural means that are the opposite of the unnatural things they have been doing that induced their illness. In other words, rest, sleep, fresh air, sunshine, good food, freedom from worry, etc. Don't overdrug these patients, but rather teach them a new philosophy of life.

The women desiring an abortion are difficult cases to handle. You can usually spot them as soon as they enter the office, if you have had much experience with the type. I listen to them respectfully in any case, and sometimes sympathetically, because many of their stories are very sad, and the worst of it is that many of the sad stories are true. I then tell them I do not consider it my duty to take life but to save it, and that I consider the Divine law, "Thou shalt not kill," is not a joke, but something that always has and always will be true, and is one of the eternal, natural laws that is sufficiently armed with teeth to make a right thinking individual consider many times before transgressing it. I also inform them that I consider feticide a particularly cowardly crime, as it means the attack upon a life that has no opportunity to defend itself, and that I place it in the same category as an attack upon an unsuspecting man in a dark alley without any opportunity being given him to defend his life.

I then try to explain what life and its responsibilities mean, because I find the majority of these people have no philosophy of life worthy the name, but are mainly "drifters" who are simply living from day to day with no outlook for the future, or at the best a hazy one. I can truthfully say that in the majority of instances I have been able to reach home with my arguments and persuade them to continue their pregnancies with an entirely different outlook on life. If the woman is young, I invariably ask to see the husband also before I talk to her, as I find, practically without exception, the young husband is largely responsible for her seeking an abortion. Most of these people are not really bad. They simply have not understood life correctly, and many times what teaching the woman has had from older women has been bad. It has always been a matter of great surprise to me how many older married women there are posing as advisers to young married women who should really be in the penitentiary instead of apparently occupying positions of honor in the community.

If these women have four or more children, and they are in such financial circumstances they cannot properly support and educate a large family, or if the woman herself has tuberculosis or a serious form of heart disease or some other obstacle to a healthy, normal pregnancy, I seek to extract a promise from the husband that he will consent to a vasectomy, and armed with that promise, I persuade the mother to go on with this pregnancy, representing to her that it will certainly be her last. While some may present theoretic objections to this plan, it has seemed wiser to me than having the mother begin an abortion life, or lapse into a condition of blank hopelessness, as many of these poor creatures do, who while yet young women, with a family of three, four or more, are faced with the practical certainty of having a baby about every twelve or fourteen months, whom they are not physically or financially able to care for, and a certain percentage of whom will almost inevitably have to be cared for later by some state institution, frequently a state industrial school or worse.

There is a group who come in occasionally seeking data for a possible damage suit against some other physician. In handling this class the best advice I can offer is, "put yourself in the other fellow's place." These people are almost always worthless dead beats who are not worthy to touch the hem of the previous doctor's garments. Yet it is better to handle even them courteously, because you may be the man whose advice may stave off some trouble for the previous attendant, and if you do not give it, they may continue their rounds until they find some unscrupulous doctor who may give them the adverse opinion they desire. Examine their alleged troubles carefully, and when you have satisfied yourself fully of the facts in the case, either tell them it is one of the finest pieces of work you have ever seen, considering the difficulties confronting the original doctor, or if you cannot do this conscientiously, send them back to the doctor, get in touch with him, and do your best to get them together with their difficulties ironed out. It is worth a whole lot to everyone concerned if you are able to accomplish this. If you are not, tell them you do not handle the legal end of the practice of medicine, that you are concerned only with the art of treating the sick and injured.

Remember there is no such thing as a successful damage suit that has been fostered and nursed along by some short sighted doctor. I am happy to say, though, that I think the custom of fostering damage suits is on the wane among medical men, and I think we should all try to see that it is a poor revenge to take on some physician we do not happen to like personally, and not even a good thing to do for some victim for whom we feel sorry, as most of these cases simply cause a lot of trouble to everyone concerned, and are also largely unsuccessful for the plaintiff.

The partial charity case sometimes presents a real problem. My method of handling them can be best illustrated by the following actual experience. Around Coeur d'Alene we have some people who live in the foothills and eke out a miserable existence by selling butter and eggs, and occasionally some cordwood. They just barely get along if they have no sickness or accidents in the family. About a year ago one of these fellows came in with a little girl of nine years old who had a fracture of the lower third of the radius. I took an x-ray picture and put the arm up in a splint. When the work was finished he asked how much it was going to cost him. I questioned him a little and found he was one of the type I have mentioned, and that it was practically hopeless for him to pay full price for the work. I told him the schedule price for the work was $50, then asked how much he could afford to pay. He thought a little, then said he believed he could pay $25, of which he paid $15 at the time. I told him that would be perfectly satisfactory, but that inasmuch as he had made his own charge, I should expect him to pay it without fail and in a reasonable time. He has not paid the balance yet, but has been in once or twice to ask for an extension of time, and just last week arranged to pay it in cordwood in the near future.

These patients appreciate the justice of this plan and I do not recall an instance where it has not worked very well. It is much wiser to my thinking, to have they themselves set a figure they can pay, and intend to pay, than one which you might set that they consider exorbitant and practically impossible of payment by people of their earning capacity. If you are dealing with widows, supporting a family of small children, or in fact anyone deserving of charity in your opinion, give your services gracefully and courteously, thanking the Lord each time that conditions are not reversed.

How shall we handle the deadbeat? I think the very kindest thing we can do for him is to make him pay his bill. There is no question but that we doctors have made more than our share of them by our lax, careless methods of collection, and it is our duty to unmake as many of them as we can, thus possibly winning them back to respectability and decency. I think our small claims court in Idaho is one of the best possible medicines for them, and we should use it much more than we do. Above all, keep on the job and don't let these accounts get too old. Though I have had no occasion to use it yet, I believe the collection system fostered by the League in Idaho to be a good thing, and I shall certainly use it in the future in preference to other collection agencies, because they certainly do not give satisfaction. It is too bad physicians do not have a sort of clearing house on these people, in which a check could be kept on the professional rounders so that each and every doctor in a community would not need to be victimized by them.

The dope fiend is another real problem. The all too prevalent custom is for every doctor to give the man a shot and get rid of him for some other physician to handle. If there are six doctors in a given community, that means possibly three or four shots for the addict before it becomes necessary for him to travel to another community. I think we have adopted a better method in Coeur d'Alene. We inform the addict at once that we turn all of these cases over to the county physician for his exclusive handling, thus obviating the possibility of his milking one man after another for a shot. It seems to me the problem of their care, other than this, is up to the Federal government. I will say, however, that I consider the light sentences generally handed to "dope peddlers" to be a farce, considering the damning nature of the traffic. Internment for life in a prison camp for the peddler and internment for at least five years for the user would be my idea of getting at the problem. If the dope user were met with some such sentence for the first offense, youngsters would think three or four times before beginning such a horrible habit.

It is practically impossible, within the scope of this paper, to discuss the method of handling each type of individual who may consult you. With other than the special types I have attempted to consider, we must simply attempt to develop that attitude of fairness, frankness and honesty of purpose which you would like to have exhibited towards you, should the relation of physician and patient be reversed. You will not go far wrong if you do this.

Before closing I wish to draw attention to an attribute I believe we should all attempt to develop in our relation to patients which might be termed postivity. I can look back on my professional life and see that the dilly dally, negative method of making a diagnosis and prognosis has cost me many a prospective patient. Patients, in the main, have the right to a definite statement from you as to the nature of their illness and its probable outcome, and they will not be satisfied with any less. We should attempt to constantly improve our diagnostic and therapeutic acumen so that we may legitimately feel that we are in a position to give the man consulting us the best he can procure in the community, but when this standard of excellence is attained, don't be self depreciatory, but come out like a man, say what you have to say in no uncertain tone, then stick to it. A patient may be tolerant of a physician's mistakes, if he does not make too many of them, but a negative statement is anathema to him.

Finally, be hopeful in your prognosis, even in the face of seeming defeat. Be cheerful with your patients, even if your heart is away down in your toes. It is the principal weapon of your armamentarium. Any ordinary person can be gloomy in the presence of severe illness, but only the educated physician with a philosophy of life which intelligently recognizes that the majority of sick people get well, if given half a chance in the line of sensible treatment, can continue to be hopeful and thus encourage the patient by his sanguine outlook as to the final outcome. There is nothing so pitiable as the expression of blank hopelessness on the face of a patient whose physician has admitted defeat. Recognize intelligently the gravity of a serious case, but never admit defeat for your patient's sake.

Be good, sensible fellows with a philosophy of life that enables you to help your patients when their illness is of the mind or spirit rather than the physical. It does not matter what you call your philosophy, so long as it helps you to help other people in their need. The more you use such a philosophy the more you wil have for yourself and the more good it will do you. Be successful and happy, look for the good in other men, and get all the joy and beauty out of life you can. These things will make you successful physicians and a power in your community, and more than anything else will help make your professional relationships harmonious and friendly.

SUCCESSFUL LIGATION OF THE COMMON FEMORAL ARTERY AND VEIN FOR GUN-SHOT WOUND

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Ligation of main arterial trunks was performed frequently during the late World War. In injuries of this character the first thought is, will gangrene result from the ligation. A study of the publications relating to this problem with especial reference to ligation of the common femoral artery indicates that gangrene does not occur as frequently as is generally supposed.

Heidrich[1] traced the literature for ten years back, covering ligation of main arterial trunks. In discussing ligation of the femoral artery he reported 256 ligations of the femoral artery above the branching of the deep femoral with gangrene 12 times (21.8 per cent), 87 ligations of the femoral artery below the branching of the deep femoral with gangrene nine times (10.4 per cent), 15 ligations of the femoral artery complicated with fracture of the thigh, gangrene 14 times (93.3 per cent), 67 ligations of the femoral artery and vein, gangrene 14 times (9.4 per cent), 36 ligations of the femoral vein, necrosis one time (2.7 per cent).

Barbarroux,[2] quoting Kageyama's statistics covering 108 ligations of the primary femoral vessels, showed 38.8 per cent gangrene. Commenting further, Barbarroux states that the nearer the ligation is performed to the origin of the artery the less danger of gangrene, because the high ligation affords collateral circulation through the branches of the hypogastric, as the ischiatic, gluteal, internal pudic and obturator.

The results of ligation of a main trunk depends primarily upon the collateral circulation bridging the break in the normal channels. The collateral circulation may be seriously interfered with by the presence of blood in the tissues pressing upon the capillaries and larger vessels. The outflow of blood from both vein and artery increases the danger of gangrene because the tissues are thus drained of nourishment and gangrene is more apt to occur under these conditions, while the collateral circulation is being established.

Heidrich, quoting Sehrt, states that gangrene occurred in 20 per cent of cases where just the artery was ligated in cases of the lower extremity, while only in 9 per cent when vein and artery were ligated together. Gangrene occurred in 7.8 per cent in upper extremity, when the artery alone was ligated, while there was none, when vein and artery were ligated together. LaRogue,[3] Barbarroux,[2] Vazent,[4] Sencert, Crowell[5] and others agreed with Sehrt that the incidence of gangrene is diminished by ligation of the vein when the main artery is ligated.

Relating to the question of ligation of the vein with the artery, Savvin[6] has suggested a procedure which merits consideration. After ligating the artery he pressed on the vein and watched for a change in color. If the color was pale and began to get rosy while pressing on the vein, the author considered that it was necessary to ligate the corresponding vein. The same author has seen cases where, in wounds of the femoral above the origin of the deep femoral, the limb remained rosy after ligating the femoral artery and where it became bluish after compression of the vein. In such cases the vein was not ligated except in cases of necessity.

The prognosis following ligation of main arterial trunks depends upon the nature of the injury. In cases where the injury is accompanied by fracture, the incidence of gangrene is very high. Infection complicating the injury increases the incidence of gangrene, as does the amount of time elapsing between the injury and the ligation. The longer the time the greater the opportunity for reestablishment of the circulation.

Refering to the prognosis of ligation of the common femoral artery, it appears that gangrene seldom results. Barbarroux[2] states that ligation of the common femoral would appear to be one of the most benign procedures, one of those which would entail the least of troublesome consequence. It is much less grave than ligation of the popliteal artery or the tibiofibular trunk. It is less important, as far as the vitality of the limb is concerned, the nearer it is performed to the origin of the artery. The same author states that published cases of primary ligation of the femoral artery followed by complete recovery, without circulatory trouble, are rather rare, especially following war wounds. Bishop[7] stated, with regard to ligation of arteries of the lower limb, "on the lower limb, the risk of gangrene after ligation of the main artery in the thigh is not so great as we have been led to believe." T. Olinczyc (quoted by Tissot)[8] reported four high ligations of the common femoral artery with recovery without circulatory trouble. Baudet (also quoted by Tissot) considered ligation of the common femoral artery as benign.

However, Hartleib[9] states that "in those cases in which one is forced to ligate above the point where the deep femoral branches, it is doubtful whether this will suffice to prevent gangrene." The author believes that the building of a collateral circulation reaching to the foot is only possible through the deep femoral.

A sequel to ligation of a main arterial trunk, relating to the function of the limb, is illustrated by Roux-Berger's[10] two cases of injury to the superficial femoral. The author saw these two cases three years after ligation and noted that the limb in each case showed approximately 50 per cent difference in arterial pressure as compared with the unligated side. Fatigue was noticeable. The patients were unable to walk far. The lower third and the inside of the leg were numb. The pulse of the anterior tibial artery was strong on the unligated side, scarcely perceptible on the ligated side.

CASE REPORT

April 29, 1925, Dr. H. A. Anderson of Rigby, Ida., brought a male patient, age twelve, to the Idaho Falls Latter-Day-Saint Hospital. About five p. m. of the same day the child had placed the muzzle of a twenty-two revolver against his abdominal wall. The weapon was discharged by manipulating the hammer, which was caught.

Seen at 6:30 the child was in shock. The pulse rate was 120 and compressible. On removing the blood-soaked clothing a bullet wound was noted at the outer border of the right rectus muscle, 5 cm. (2 inches) above the spine of the pubes. A small amount of blood was oozing from it. The lower right abdominal wall was elevated noticeably, with the highest point over the center of Poupart's ligament. A flouroscopic examination located the bullet just anterior to the lesser trochanter of the right femur.

The child was taken immediately to the operating room and an incision made over the center of the raised portion of the abdominal wall, extending from two inches above McBurney's point to the apex of Scarpa's triangle. A large blood clot was encountered. On removing the clot profuse hemorrhage occurred. The dissection was carried down to the femoral vessels, where a rent about a half inch in length was found in the femoral artery and vein, extending downward from a point just below the lower border of Poupart's ligament. The artery and vein were ligated with number two chromic catgut distally and proximally and the wound closed without drainage. The child was placed in bed with right lower extremity elevated and the radiant light applied. The extremity was colder than the left, somewhat mottled and with diminished sensation. The popliteal and dorsalis pedis arteries were not palpable.

The postoperative course was rather stormy. On the eighth day the afternoon temperature reached 102.4° F; eleventh day 104.6° F; sixteenth day 104.6° F. On the sixteenth postoperative day the white count was 6,200; on the twenty-first day 5,300. The wound was clean and the stitches out on the seventh day. On the twenty-third postoperative day the bullet was removed to eliminate the possibility of a deep-seated infection carried into the tissues by the bullet. The bullet was found at the inner aspect of the right thigh, just anterior to the lesser trochanter. The femoral artery was very small and did not pulsate. The vein was collapsed. No infection was found to account for the temperature.

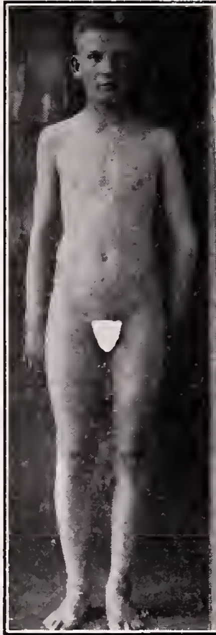

Fig. 1.

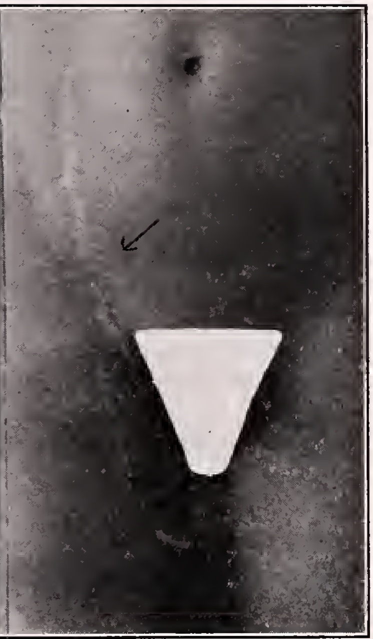

Fig. 2.

Fig. 1. This photograph was taken a year after the operation. The right thigh is an inch larger than the left. Otherwise no difference is noted between the two extremities. Usually some atrophy occurs on the ligated side.

Fig. 2. The arrow points to the entrance of the bullet. The scars show distinctly the locations of the incisions. The incision on thigh was made to remove the bullet.

A Widal on the eleventh day was negative; on the twenty-fifth day slight agglutination for the baccillus typhosis; and on the thirty-fifth day more agglutination of the baccillus typhosis and four plus for para "A" and "B." We concluded that the temperature and course justified a diagnosis of typhoid and paratyphoid as a coincidental infection. On the twenty-eighth day following the injury the right lower extremity showed considerable flexion at the knee. Attempt to straighten the knee produced pain. The flexion reached an angle of 35 degrees in spite of attempts to keep the knee joint extended. By application of hot moist dressings and extension to the extremity the leg could be completely extended by the time of dismissal on the forty-ninth day from the injury.

May 20, 1926, a few days over a year after the injury the patient was examined. Measurements of the lower extremities were the same except the circumference at the center of the right thigh. This was an inch more than the left. The dorsalis pedis and popliteal arteries were not palpable on the affected side. The patient states he found that the extremity was quite awkward and became tired more easily than the left unligated side. Otherwise no difference was noted in the lower extremities.

In this case the ligation of the common femoral artery was performed about three hours after the injury. Very little time elapsed for the establishment of the collateral circulation. In the cases studied by the author the ligations had been performed at a much later period. In the uncomplicated cases it would appear that high ligation of the common femoral may be performed without delay for the establishing of collateral circulation. The anastomosing vessels are adequate to supply the necessary blood to maintain the vitality of the extremity.

This case seems worthy of reporting because it is an accident which any general surgeon may be called upon to meet. The question of ligation versus anastomosis of the injured vessels is of course to be considered. But it seems to the author that, if such cases as this were reported with the results, the knowledge would be of great comfort to the general surgeon who can do a successful ligation, while his ability to successfully anastomose a vessel may be questionable.

BIBLIOGRAPHY

1. Heidrich, L.: Causes and Frequency of Necrosis after Litigation of Large Vessels. Beiti. Z. Klin. Chir., Tubing., 1921, cxxiv, 607-638 (Ueber Ursache und Haufigkeit der Nekrose bei Ligaturen grosser Gefasstamme).
2. Barbarroux, Timoleon: Quelques observations de ligature des vaisseaux femoraux primitifs. (A Few Observations on Ligation of the Primary Femoral Vessels.) Marseille Med., 1918, lv, 720-725.
3. LaRogue, G. P.: Another Case of Bullet Wound of Femoral Artery and Vein Successfully Treated by Ligation of Artery and Vein and Extripation of Injured Segment. Ann. Surg. 1922, lxxc, 707-707.
4. Vazeux, Lucien: De la frequence des gangrenes dans les ligatures arterielles. (Frequency of Gangrene in Arterial Ligation.) Paris Theses, 1918-19. No. 117, 7-59.
5. Savvin, V. N.. Expediency of Ligating the Vein for Hemostasis in Operating on Large Wounded Arteries. Russk. Vrach. S. Petersb., 1917, xvi, 78-80.
6. Crowell, E. M.: Simultaneous Ligature of Arterial and Venous Trunks in War Surgery. Brit. M. J., Long., 1917 i, 577.
7. Bishop, G. T.: Ligature of Arteries in the Continuity of a Limb. J. Roy Nav. Med. Ser., Lond., 1916. ii, 153-157.
8. Tissot: Apropos des Accidents Conseculifs a la Ligatures des Vaisseaux Femoraux Communs. (Results Following Ligation of the Common Femoral Vessels.)
9. Hartleib: Verhalten des Unterschenkels nach Unterbindung derf Arteria femoralis. (Reaction of the Lower Leg after Ligation of the Femoral Artery.) Beitr. Z. klin, chir., Tubing., 1918, cxii, 425-429.
10. Roux-Berger, J. L.: Ligature de la Femorale. Bull. et men. Soc. de chir. de Par., 1922, xlviii, 826-828.

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Breast Feeding Demonstration and Physician. The three cardinal points laid down by Sedgwick for the conduct of the breast feeding demonstration are: (a) an interested and informed nucleus of medical men, enthusiastic over the possibilties and the advantages of breast feeding and possessing a scientific grasp of its technic; (b) the birth-recording bureau of the local department of health, and (c) an administrative bureau with an adequate staff of trained visiting nurses, to visit every new mother within a short time of the birth of her baby. When the results of a breast feeding demonstration based on these three factors are evaluated, however, Frank Howard Richardson, New York (*Journal A. M. A.*, Dec. 11, 1926) says it has usually been found that they fall short of what thoughtful workers had hoped they might be. It is easy enough to get brilliant figures for the period actually covered by the mechanism of the demonstration. Those obtained in Minneapolis (from 92 to 96 per cent) on the breast for the first month, according to the interpretation given the results obtained, down to about 70 per cent for the first six months) can be duplicated anywhere by conscientious work. But such a piece of work must be judged, not by the figures of the year in which it is actually in operation, but by the results obtained year after year, when the active demonstration is a thing of the past. Judged by this standard, the results of these demonstrations have been far less encouraging. It is to record this fact, report progress toward remedying it, and outline a plan that it is hoped will be the solution of the difficulty that Richardson has written this paper. In the Nassau County demonstration, a distinct step in advance was taken which did away with much of the irritation and even active opposition of the medical profession seen elsewhere. Here the rule was made that no mother was to be seen by any visiting nurse until the consent of the physician who had signed the birth certificate had been obtained. This step is earnestly urged on any community attempting such a piece of work in the future. A second rule is that in no place will the state department of health consider lending aid through its district state health officer, local nurses, bureau of vital statistics and instructing breast feeding nurse unless the county medical society or local academy of medicine asked for such help and decided by a formal resolution that it desired to put on a breast feeding demonstration in its locality. One more step to be taken before the breast feeding demonstration becomes the force for definite, enduring, permanent medical and social advance that it can become if only its proponents can have the wide and far-seeing vision necessary to safeguard it from its known and evident weaknesses consists in bringing to the members of the local medical profession, through their own unit of organized medicine (usually the county society, though the local academy of medicine, affiliated with organized medicine, may be preferable in the case of small cities within large counties) the whole message of breast feeding, as part of the graduate education movement that is spreading over the whole country. In this way, the technic of breast feeding, its almost universal applicability, its possibilities, its advantages, its difficulties, can all become matter of common knowledge to the men who are eventually, it is to be hoped, to carry on the work in their own community. As a part of such a graduate education movement on the part of the county medical society, at least one center should be established in which clinical opportunities may be offered. Such a center, administered by a pediatrician who is enthusiastic over breast feeding and thoroughly conversant with its difficulties, is invaluable. Expression of the breast milk, the handling of the reluctant nurses, the prevention and treatment of caked breast and cracked nipple, the handling of the regimen of lactation, can here be learned in practice, which is immensely more convincing and satisfactory than didactic teaching, however admirable that may be. What is perhaps the most valuable feature of such teaching, however, is the fact that it is offered by the physician's own organization, and not by some outside agency, no matter how well meaning and conscientious such agency may be.

Value of Xanthine Diuretics in Congestive Heart Failure. The so-called xanthine (or caffeine) group of drugs is generally regarded as consisting of caffeine, theobromine and theophylline. Although these drugs have been in use for a long period of years, there is a surprising lack of clinical studies on which their intelligent employment in cardiac patients may be based. There is fairly general agreement on two points: that the xanthine diuretics may occasionally prove beneficial, and that theophylline is the most potent member of the group. Physicians do not agree as to the frequency with which the necessity for their administration arises, and reports are not made that indicate the percentage of successful results one may expect from their use. Therefore, this study was undertaken by H. M. Marvin, New Haven, Conn. (*Journal A. M. A.*, Dec. 18, 1926), with the hope of providing a partial answer to the questions: How often, in a series of cardiac patients, are diuretics necessary, and how frequently do they prove effective after digitalis alone has failed? The patients who form the basis of this report were adults with advanced congestive heart failure characterized by large amounts of subcutaneous edema. Many of them had, in addition, hydrothorax or ascites or both, but not a patient was studied who did not have extensive subcutaneous edema. The great majority of these patients were kept at complete rest in bed, with restriction of the fluid intake. Each patient was completely digitalized. If the edema diminished as a result of digitalis therapy, the drug was continued for a number of days to determine whether it would prove entirely satisfactory. If, however, all or part of the edema remained after digitalis had been given for a considerable period, one of the xanthine diuretics was given, and repeated if necessary after an interval of four or five days. If the first diuretic proved ineffective, it was usually repeated at least once before being discarded as useless. Some patients received all the drugs with no response to any of them; in such individuals, subsequent attempts to provoke diuresis were conducted with theophylline alone, as it was considered the most potent of the group. Three drugs were employed. Theobromine sodiosalicylate was given in doses of from 2.6 to 5.3 Gm. (40 to 80 grains) daily for five or six consecutive days, and was then omitted for at least a week before being repeated. Most of the patients who received this preparation were given 4 Gm. (60 grains) daily; only two received the larger doses. Theobromine was administered in gelatin capsules by mouth in doses of 0.6 Gm. (10 grains) three times daily for two consecutive days. Theophylline, in the form of synthetic theophylline (theocin), was employed in a dosage of 0.3 Gm. (5 grains) three times daily for two consecutive days. Seventy-seven patients were studied; twenty-seven with rheumatic heart disease, and fifty with arteriosclerotic or hypertensive heart disease. Thirty-six were made edema-free by digitalis alone. Of the remaining forty-one, thirteen were entirely relieved of edema by one or more of the diuretics employed, five others had well marked diuresis with loss of most of the edema and five more were moderately benefited. Theobromine sodiosalicylate in doses of from 2.6 to 5.3 Gm. daily for five or six consecutive days was effective in only two of eight patients, although five of the remaining six responded satisfactorily to theobromine or theophylline. It was regarded as of very little value. Theobromine in doses of 0.6 Gm. three times a day for two days was partially or entirely satisfactory in seven of seventeen patients. Of the remaining ten, one half later obtained excellent diuresis from theophylline. Theobromine was a far more effective diuretic than was theobromine sodiosalicylate and was equally devoid of undesirable side-actions. Theophylline was far the most potent diuretic of the three preparations. It proved effective in a number of persons who had failed to show diuresis after the administration of the other two drugs. Its therapeutic usefulness was somewhat limited by the nausea and vomiting that followed its use. It is Marvin's opinion that there seems not to be a sound basis for the attitude assumed by many that diuretics are worthless. A certain proportion of cardiac patients can be relieved of symptoms by these drugs after adequate treatment with digitalis has completely failed. There is evidence to indicate that the xanthine diuretics are most effective in the arteriosclerotic-hypertensive heart disease group, as contrasted with the rheumatic heart disease group.

Practical Treatment of Duodenal Ulcer. Out of 100 patients seen at the Mayo Clinic with probable duodenal ulcer, only eleven had had a Sippy treatment lasting three weeks or more; nine more had been put to bed for short intervals, and another nine had been given frequent feedings. Altogether, fifty-two had had some change made in their diet, and forty-eight had been practically untreated. They had suffered for an average of ten years, and had seen an average of four physicians. The diagnosis had been made in thirty-three cases and suspected in twenty-nine more. Walter C. Alvarez, Rochester Minn. (*Journal A. M. A.*, Dec. 18, 1926), aserts that the failure to recognize the disease can be ascribed mainly to the fact that the clinical picture of duodenal ulcer has only recently become clear—so recently that the descriptions in textbooks are still inadequate. The failure to treat it intelligently is also due to the deficiencies of the textbooks, which describe only one type of management and that, one which is not practical for most patients. The essential feature of the treatment outlined by Alvarez is the taking of food between meals. That, unaided, will, he says, bring comfort to many patients with uncomplicated duodenal ulcer. "In the morning a mixture should be made up which may consist of a quart of milk, two eggs and either a gill or half pint of cream, depending on the patient's need for extra calories. If milk is not well tolerated, a certain amount of thin gruel made from any cereal may be substituted. Robinson's Scotch groats or Robinson's barley flour is very suitable. The patient takes a bottle of this mixture to work with him and drinks a glassful, about 6 ounces, at 10 a.m., and at 2, 4, 8 and 10 p.m. He should have another glassful by his bed in case he should wake during the night. There does not seem to be any theoretical or practical reason for icing it. He takes his breakfast at 7:30 a.m., lunch at 12 m., and dinner at 6 p.m. If he should be traveling or if he should forget to take his bottle with him, he can get a milk-shake or malted milk at a soda fountain. He may also carry around with him a box of crackers of some kind. In some cases the pain will recur within an hour and a half, and the food must then be taken every hour and a quarter. In Alvarez' experience, however, cases as severe as this do not do well on medical treatment. In practically all uncomplicated cases the patient gets immediate relief from his distress and begins to gain in weight and strength. He is asked to rest as much as possible on Saturdays and Sundays, and he is forbidden to do any lifting or gardening. He must give up his "daily dozen" and he probably had better give up his golf. Walking is about the only exercise that is allowable. Alvarez thinks it wise for these patients to take food at 9 or 10 a.m. and 3 or 4 p.m. for months and years after they are apparently cured. Many have relief from pain and indigestion just so long as they persist in being careful.

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EDITORIAL

"DO UNTO OTHERS"

In times not long past it was a common and widespread practice for a physician who was called to treat a patient who had been under the care of another physician to discredit, openly or by insinuation, everything that his predecessor had done. If the patient died, it was always either because something had been left undone that should have been done or something had been done that should not have been done. Many times relatives were left with saddened hearts, tortured by regrets over these sometimes real and more often imaginary omissions, oversights and erors, and much unnecessary grief followed such episodes.

Medical ethics have risen to higher levels since the days when this practice was in vogue but even today there are among us a few physicians who eagerly resort to methods of this kind. Such a physician is not above the practice of glorifying himself at the expense of the doctors who preceded him in the treatment of a patient. He discovers that a urinalysis has not been made, that the patient has sugar in the urine, previously unrecognized, that roentgenograms which he makes reveal changes that should have been discovered before, and that as a result his patient is in such condition that death is inevitable. And all because the other fellow failed in his duty. The patient dies and the widow, or sons and daughters, or brothers or sisters or parents, as the case may be, forever after remember and hold these mistakes not only against the first physician, but to an only slightly lesser extent against themselves. How often do we listen to such a tale accompanied by the lamentation, "Oh, had I only called the last doctor in the beginning. Oh, had this error not been made, my beloved would still be with me." And if patients take this stand with physicians on whom they call for other purposes, how much more frequently and how much more extravagantly must they discuss the matter with others who perhaps lend a more sympathetic ear, peddling the misdeeds of the first doctor in every direction and often in the same breath glorifying the second doctor, equally without just warrant or reason.

The physician who intentionally leaves the relatives of a departed patient in this state of mind does that which is brutal and disgraceful. More than that, a physician who conducts himself in such a manner not improbably will tamper with and stretch the truth, and should be distrusted by everyone with whom he comes in contact. True, patients sometimes leave medical attendants and go to others because of negligence or indifference or unskillful treatment and diagnosis. But it is equally true that they often leave their first physicians without any such reason. It is the duty of the second physician to do whatever he can for his patient regardless of what has been done by others, but he has no right to assume negligence on the part of his predecessor. And worse than that, whether or not he finds evidence of such negligence, it is his duty, especially in cases which terminate fatally, to leave as few self-regrets or criticisms of others as possible.

Our obligation is not only to soothe the pains of the living and comfort and succor the dying, but also to leave no pangs or prickings of conscience of those who remain, desolated by the loss of loved ones. And the physician who fails to minimize causes for regret and to assuage grief is unworthy, and, if justice were fully served, he should and would be cast into outer darkness.

INTESTINAL FLU

A generation or more ago the term "malaria" was a safe refuge for the diagnostician who was unable to determine the true nature of febrile conditions. It was in general use for that purpose until the discovery of the plasmodium malariæ, after which there was no excuse for this diagnosis on the part of any physician, unless the patient was truly infected with malaria. At the present time the diagnosis "intestinal flu" is analogous to the former use of malaria. Its introduction dates from the influenza epidemic of 1918, since which time it has been widely and loosely employed as a cloak for ignorance in a variety of abdominal disorders. For many years "ptomaine poisoning" was the popular designation for uncertain and obscure intestinal disorders. At present, however, that seems to have been largely retired in favor of the diagnostic label under consideration.

Whether intestinal influenza is an entity which really exists is a matter of dispute. In no authoritative textbook is it listed as a distinct ailment.

Tice[1] states that gastrointestinal complaints are present at times during attacks of influenza, the symptoms of which are purely functional in character. While occasionally accompanied by bloody discharge and stringy mucus, these are the only evidence that at times the disease develops definite signs of catarrhal, inflammatory or ulcerated conditions. Stevens[2] affirms that gastrointestinal symptoms were not uncommon in the epidemic of 1889, but comparatively rare in that of 1918. Intestinal symptoms of abdominal pain, nausea, vomiting and diarrhea are occasionally sufficiently severe to suggest cholera morbus or dysentery. Sajous[3] mentions similar circumstances in the digestive tract as a complication at times of influenza. Abt[4] claims that the gastrointestinal type of influenza occurs mainly in children and young adults. In some cases, he states, there may be no signs referable to the respiratory tract, though children thus affected often complain of abdominal symptoms. The writer on this subject in Osler and McCrae's Modern Medicine[5] declares that this form of influenza as an entity is of uncertain existence. He has never seen a case with absence of respiratory symptoms in which the diagnosis was sure.

Thus, it is to be noted, the opinion seems to prevail that the intestinal tract may be affected by the organism producing influenza, most commonly, however, as a complication of this recognized disease. In this discussion the protest is against the off-hand and easy diagnosis of "intestinal flu" in the presence of a variety of indefinite abdominal symptoms. For the purpose of accuracy the conscientious physician will, so far as possible, make his diagnoses in accordance with established pathology and symptomatology. In the absence of these factors let him admit his inability to arrive at a satisfactory diagnosis. It harms neither patient nor practitioner for the latter at times to admit he does not know, although such admission is most difficult on the part of many physicians.

PRIZES FOR CANCER DISCOVERY

Within recent years the pursuit of the cause of cancer and the search for its cure have been carried on most assiduously among all civilized nations of the world. From time to time it has been announced the quest has been attained, and in more or less glowing terms a remedy has been proclaimed as established. Each claim in turn has been proven groundless, and the baffling mystery of cancer is as unsolved as ever.

Now comes a stimulus for the continuation of these efforts, backed by the offer of a large amount of real money. William Lawrence Saunders of New York, prominent in business and financial circles, has offered to the American Society for the Control of Cancer two prizes of fifty thousand dollars each. The first will be given "To any person or group of persons who may discover what human cancer is, and how it can be prevented." The second will be given "To any person or group of persons who may discover an absolute cure for human cancer." The decision upon these rewards is to be determined by the American Society for the Control of Cancer, and approved by the American Medical Association and the American College of Surgeons. These prizes stand open for a period of three years, which may be renewed later. These prizes are offered not only to physicians, but to any one who may participate in the contest. Since Mr. Saunders believes in the keen genius of the lay mind, he thinks that possibly the problem ultimately may be solved outside the medical profession. The world will observe with interest whether the prospect of winning a fortune will produce greater results than the sole impulse of scientific enthusiasm.

PROGRESS OF PERIODIC HEALTH EXAMINATION

Efforts to interest the medical profession in the periodic examination of healthy people has been carried on industriously for some little time. It will be of interest in those states where efforts have been made to promote this enterprise to note to what extent actual results have been accomplished, and how they are progressing. In the Northwest the matter has been taken up energetically both in Oregon and Washington, and it seems as if the medical profession might seriously undertake the actual administration of this work in these states.

In Oregon the most substantial progress has been made. Under the leadership and enterprise of Dr. F. D. Stricker, Secretary of the State Board of Health, an organization has been established, through which more than thirty physicians have made a study of the technic of periodic examinations. It is recognized that one cannot offhand undertake these examinations without previous instruction and demonstration as to how they can be made most effectively. Under the supervision of

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1. Tice: Practice of Medicine, Vol. V, 292, 1921.
2. Stevens, A. A.: The Practice of Medicine, Second Ed., 133, 1926.
3. Sajon's Analytical Cyclopedia of Practical Medicine. Vol. V, 661, 1925.
4. Abt's Pediatrics. Vol. VI, 227, 1926.
5. Osler and McCrae: Modern Medicine, Second Ed., Vol. I, 543.

the State Medical Society, State Board of Health and University of Oregon Medical School, a "College of Health Examiners" has been established. Under its direction periodic health examiners will be trained, and all graduates will become Fellows and prepared to carry on this work. About seventy men have been in line for this fellowship.

In Washington the work is in a much more formative stage. Under the personal direction of Dr. H. G. Willard, President of the State Medical Association, this subject has been presented to a series of the county societies, with an endeavor to enlist the interest of as many physicians as possible in different parts of the state to inaugurate these periodic examinations. It is proposed to put on demonstrations on a large scale as in Oregon. Under the supervision of the Public Health League a campaign of public education is to be conducted, during which publicity will be given to the laity regarding periodic health examinations. The manual, prepared by a committee of the American Medical Association, has been mailed to each member of the state association, with the hope that it will be carefully read, and be the means of enlisting an interest in this work. It is expected that some time in the future a report of substantial progress can be presented regarding this movement in the Northwest.

MEDICAL NOTES

New Advertisements. The following new advertisements will be found in this issue. W. A. Baum Co. (page 18) presents the well known Baumometer. Morton Salt Company (page 14) offers its table iodized salt. Announcement is made (page 8) of the annual clinical session of American College of Physicians. Preliminary announcement is presented (page 50) of University Extension Course of Lectures.

American College of Physicians. The Eleventh Annual Clinical Session of the American College of Physicians will be held in Cleveland, Ohio, February 21-25. A program has been prepared, in which the Cleveland hospitals and the Western Reserve University will participate in providing prominent clinicians and an abundance of clinical material. Mornings will be devoted to clinics and demonstrations, with papers on medical topics afternoons and evenings by distinguished members of the profession from American and foreign countries. The American College of Physicians is a national organization for discussion of problems of interest in internal medicine. Physicians with reasonable qualifications are eligible for acceptance in its membership. All qualified physicians and laboratory workers are invited to attend this session.

OREGON

Portland City and County Medical Society, at the annual meeting on Dec. 15, elected the following officers for the year 1927; President, Dr. S. M. Strobecker; vice-president, Dr. Otis B. Wight; secretary, Dr. R. H. Wellington; treasurer, Dr. K. P. Gray; Councillors, Drs. Wm. House, Harold Bean, Frederick Stricker, C. J. McCusker, A. G. Bettman, and J. B. Bilderbeck.

State Aid for Children's Hospital. The State Budget Commission has approved an appropriation of $65,000 per year toward the support of the Doernbecker Memorial Hospital for children, Portland.

Railway Surgeons Appointed. Dr. W. B. Coffey has been appointed chief surgeon and general manager of hospitals of the Southern Pacific Railway in place of Dr. E. K. Ainsworth who has resigned. Dr. James C. Zan of Portland, chief surgeon of the United Railways Company, has been appointed to a similar post in the Spokane, Portland and Seattle Railway Company.

Open Private Hospital. Drs. R. H. Mast and Earl Wilson recently opened their new hospital building at Myrtle Point. The new structure is two stories in height and finished in stucco. It contains offices and laboratories for the physicians in addition to rooms for patients. The total capacity of the hospital, including the old building, is increased to twenty beds.

Cancer Authority Speaks. Dr. Maud Slye, of the Sprague Memorial Institute of the University of Chicago, addressed the Portland Academy of Medicine on Dec. 16, on the subject of cancer. Officers of the Academy who were elected for the ensuing year are: President, Dr. Hugh Mount of Oregon City; secretary, Dr. Harold Myer, of Portland.

Addresses Scientific Society. Dr. T. Homer Coffen, Portland, was the principal speaker at a meeting of the Oregon Chapter of Sigma Xi, on Dec. 10. His subject was "An Electrocardiograph Study of Auricular Fibrillation of the Heart."

Central Willamette Medical Society met at Corvallis on Dec. 2. A banquet at the Benson Hotel preceded the meeting.

New Medical Officer. Major H. C. Mallory, Medical Corps, U. S. A., has assumed the position of chief medical officer for the 96th Division, with headquarters at Portland. He was formerly stationed at Schofield Barracks, Hawaiian Islands.

Medical Wedding. Dr. Thurston W. Laraway and Miss Lillian B. Wilson of Veronia, were married in Portland on Nov. 21.

WASHINGTON

Addition to Tuberculosis Sanatorium. A new wing has been completed at the Oakhurst Sanatorium at Elma, which will provide additional space for thirty patients.

Appointed Superintendent. Dr. Charles C. Tiffin, of Seattle, has been appointed superintendent of the King County Hospital. Dr. Tiffin was formerly coroner of King County. He will enter upon his new duties Jan. 1.

To Limit Clinics. The Chelan County Medical Society is opposed to the unregulated establishment of medical clinics by local philanthropic and fraternal organizations. At a recent meeting the society adopted a resolution, in which it is stated that such clinics should be sanctioned by the county and held under its auspices.

FORMS STUDY CLUB. At a dinner held on Nov. 23, the Centralia Academy of Medicine and Surgery was organized. Dr. David Livingstone was elected president. Biweekly meetings are to be held for the purpose of discussing clinical problems.

VISITOR FROM JAVA. Dr. J. J. Lonkhwijzen, director of health at Weltevreden, Java, stopped in Seattle recently while en route to his home in Amsterdam, Holland.

THE SEATTLE SURGICAL SOCIETY will hold its annual meeting on Jan. 21-22. Dr. Frank Lynch, professor of Obstetrics and Gynecology at the University of California Medical School, San Francisco, will be the guest of honor. Clinics will be held by him in various Seattle hospitals.

SURGEONS MEET. The North Pacific Surgical Association held its 15th annual meeting on Dec. 10 and 11, at Vancouver, B. C.

HONOR PHYSICIAN. Professional and lay friends of Dr. George B. McCulloch, in recognition of twenty-five years service as attending pediatrician to the Children's Orthopedic Hospital, Seattle, recently presented his portrait to the hospital. It was painted by Howard Chandler Christy.

CAMPAIGN AGAINST DIPHTHERIA. Following a small outbreak of diphtheria in Everett, a meeting of physicians was held on Nov. 26, under the direction of Dr. J. S. Purdy, city health officer. Plans were laid for administering toxin-antitoxin treatments free of charge to all school children.

HOLD ANNUAL BANQUET. The annual banquet of the Snohomish County Medical Society was held on Dec. 7, at the Everett Golf and Country Club. Dr. O. A. Thomle, retiring president of the society, acted as toastmaster. Dr. H. G. Willard of Tacoma, president of the Washington State Medical Association, and Drs. A. O. Loe and J. Tate Mason, of Seattle, were guests of honor.

DR. F. H. BRUSH of Yakima was attacked with appendicitis in November, and was operated upon at the St. Elizabeth Hospital. It is reported that he is making an uneventful recovery.

DR. F. H. BROWN of Seattle is recovering from an operation which he underwent recently at the Mayo Clinic, Rochester, Minn.

DR. HENRY BAER, who formerly practiced at Mansfield, has opened an office in Seattle.

OPENS HOSPITAL. Dr. E. P. Murdock, of Winthrop, has opened a private hospital at Bridgeport.

IDAHO

POCATELLO MEDICAL SOCIETY at its recent election placed the following men in office for 1927: F. M. Sprague, President; W. A. Wright, Vice-President; J. R. Young, Treasurer; and E. N. Roberts, Secretary. Meetings will be held in the Bannock County Memorial Building monthly.

ENTERTAIN TUBERCULOSIS WORKER. The Physician's Club of Boise gave a dinner at the Elk's Club on Dec. 13, in honor of Dr. H. R. Edwards, of the medical service of the National Tuberculosis Association, who has been making a survey of tuberculosis in Idaho. He presented the results of his investigation.

DR. THOS. D. WYATT, formerly of Portland, Ore., has taken over the practice of Dr. O. F. Page and management of the Page Hospital of Sandpoint, for the period of Dr. Page's stay in Boise as a member of the State Legislature.

DR. REILLY J. ALCORN, who for the past year has been engaged in mining camp practice in Alaska, has reopened his offices in Sandpoint.

DR. N. R. WALLENTINE, of Sandpoint, has been ill at a Spokane hospital.

OBITUARIES

DR. SAMUEL ADAMS of Hoquiam, Wash., died at Cushman Veterans' Hospital, Tacoma, on Dec. 1, following an illness of several months' duration. He was born in Topeka, Kan., in 1877, and graduated from the Kansas Medical College at Topeka in 1908. He was a veteran of the Spanish American War, as well as of the World War. He practiced in Lebo, Kan., until 1923, when he moved to Hoquiam.

DR. A. E. WICKENS, recently of Bellingham, Wash., died in an Edmonton, Alberta, hospital Dec. 1, aged 51 years. He was born at Niagara Falls, Ontario, in 1874, and was a graduate of Toronto Medical School in the class of 1901. He practiced in Canada for many years before locating in Bellingham in 1924. He was a musician of considerable talent.

DR. NATHAN P. WOOD, of Seattle, Wash., died at Palo Alto, Calif., on Dec. 15, following a long illness, aged 59 years. He was born in Dubuque, Ia., in 1867, and graduated from the Denver and Gross College of Medicine, Denver, Colo., in 1907. He began practice in Seattle in 1911. During the World War he saw service in the Medical Corps in France, as a member of the California Base Hospital Unit.

DR. THOMAS J. SULLIVAN, of Seattle, Wash., died suddenly at his home on Dec. 22, aged 66 years. He was a graduate of the Keokuk College of Physicians and Surgeons, Keokuk, Ia., in the class of 1887. He practiced in Centralia, Wash., and in Butte, Mont., before moving to Seattle in 1908.

DR. JOHN B. MCLEAN, a pioneer physician of Spokane, Wash., died at the home of his daughter on Dec. 20. He was born in Picton, Nova Scotia, in 1848, and graduated from Rush Medical College, Chicago. He began practice in Spokane in 1889. He served as coroner and as city health officer, and for a period of six years was superintendent of the State Insane Asylum at Medical Lake.

REPORTS OF SOCIETY MEETINGS

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., W. C. Woodward; Sect'y, O. A. Christoffersen

The general meeting of King County Medical Society was held in the auditorium of the Medical and Dental Bldg., Seattle, December 6. The meeting was called to order by President W. C. Woodward, who asked Dr. L. L. Stephens to preside, as the Seattle Radiological Society sponsored the program. There were 214 members present.

Dr. C. R. Fishel, of Tacoma, read a paper, "Indications for Selecting X-ray or Radium in Radiotherapy." He sketched the campaign against cancer which has been carried on for several years. Attention was called to the use of x-ray for this purpose since its discovery by Roentgen in 1895. When Madame Curie, in 1898, discovered radium, its usefulness in the treatment of malignant growths was soon recognized. He explained the difference between hard and soft rays as employed in both of these agencies. He detailed the forms of locations of cancerous growths which are best treated either by x-ray or radium, specifying in each the quality of rays most useful. The paper was discussed at length by Dr. L. L. Stephens.

Dr. R. C. Baumgarten presented a paper, "Spondylitis in Young Adults," with lantern slide demonstrations. He described the condition as found in young adults, and recommended roentgenologic examinations in such persons complaining of pain in the back. Hypertrophic arthritis was discussed in reference to different types of individuals. Classifications of arthritis were reviewed and each was discussed.

Dr. M. F. Dwyer presented a paper, "Cholecystography," with lantern slide demonstration. Gall bladder disease is the most frequent cause of stomach symptoms. He discussed the various forms of disease of this organ as represented in a large series of cases. Cholecystography is a great aid in their diagnosis. The necessity of careful routine examination was emphasized. A negative series of cholecystograms places the burden on the clinician to prove that the gallbladder is at fault. A gallbladder whose concentration and emptying factors are normal cannot be the seat of extensive pathology.

A letter was read from the Tacoma Chamber of Commerce, which was referred for action to the Board of Trustees.

A letter was read from Dr. C. E. Hagyard, relative to telephone listing. After discussion, an almost unanimous vote was obtained against the listing.

Dr. L. W. Whitlow urged a report to the Health Department of all active venereal cases.

Dr. W. Kelton read a report of the Cancer Committee, and urged each doctor carefully to read the pamphlet which he would receive on this subject.

The following nominations were made for officers for the ensuing year:

President, Dr. A. L. Wanamaker.

Vice-president, Drs. O. A. Nelson and G. C. Miller.

Secretary-Treasurer, Drs. W. W. Bell and C. H. Hofrichter.

Trustees, Drs. F. S. Wiltsie, H. J. Wyckoff, C. W. Shannon, W. C. Speidel.

Delegates to State meeting, Drs. R. Anderson, W. C. Woodward, B. T. King, C. E. Hagyard, L. J. Palmer, C. W. Knudson, J. T. Whitty, Walter Kelton, Arthur Crookall, D. H. Palmer, J. T. Dawson, F. R. Underwood, O. H. Christofferson, R. J. McCurdy, J. T. Mason, W. H. Anderson, W. F. Hoffman.

The medical meeting of King County Medical Society, Seattle, Wash., was held Dec. 13. President Woodward turned the meeting over to the Academy of Surgery, of which Dr. D. B. Greene is the president, who took charge of the meeting.

President Green introduced the guest of the evening, Dr. Maud Slye, Assistant Professor of Pathology, University of Chicago, who delivered an address on "Studies in the Nature and Inheritability of Cancer." She gave a summary of the laboratory work she has conducted during the past seventeen years, comprising experiments with mice. Conclusions were based on 56,000 autopsies, involving 5,000 primary spontaneous neoplasms representing all types found in human pathology. Her investigations seem to prove that cancer is not contagious. Her experience over this long period of years has proven the inheritability of cancer as exemplified in the family history of mice carried over many generations. The appearance of cancer through different generations follow the Mendelian law, as is true of all transmitted characteristics in animals and plants.

The studies in Dr. Slye's laboratory have yielded several facts of great importance: (1) In every respect the behavior of cancer is inconsistent with the germ theory of the disease. (2) Cancer is not contagious. (3) The tendency to immunity to cancer is unquestionably inheritable. (4) The tendency to be susceptible to cancer is also inheritable, but as a recessive character. (5) Susceptibility to cancer has been proven to be local and not systematic.

The North Pacific Pediatric Society will hold its midwinter meeting on January 29, at the Hotel Monte Cristo, in Everett, Wash.

PIERCE COUNTY MEDICAL SOCIETY

Pres., E. F. Dodds; Sect'y, W. B. Penney

The regular meeting of Pierce County Medical Society was held in its rooms, Tacoma, Wash., November 23, 1926, Dr. E. F. Dodds, President, in the chair. Minutes of the previous meeting read and approved.

PROGRAM

A paper, "Care of the Newborn," was read by Dr. D. M. Dayton, who stated that one-half of the births here occur in hospitals at the present time, and that one-half of the deaths of young children occur under one month of age. He stressed the danger of lack of water during the first few days, resulting in fever, loss of weight, and sometimes death. In hemorrhage of the newborn, the best treatment is human blood, preferably from the mother, which may be given intravenously or subcutaneously. Only one-half of 1 per cent of deaths due to heart disease are due to congenital defects. Pyloric obstruction is not uncommon, and may be very serious. Rhinitis may be the first sign of congenital syphilis. This paper was discussed by Dr. C. J. Brobeck.

A paper, "Blood Transfusion" was read by Dr. T. T. Nelson. He gave a complete discussion of the different technics and indications for blood transfusion. He considers the Percy tube the most reliable method.

BUSINESS

Dr. Robert S. Garnett was elected to membership.

The following amendments to the Constitution and By-laws of the society were presented by Dr. S. M. MacLean, which amendments have been approved by the Board of Trustees:

Proposed that Article III, Section 1, be amended to read as follows:

> The officers of the society shall be elected at the last regular meeting in April, to take office the last regular meeting in May which is the annual meeting. Nominations shall be made from the floor, and there shall be at least two candidates nominated for each office. All elections shall be by ballot. The vote of a majority of all the members present shall be necessary for an election. All officers shall hold office until their successors are elected and qualified.

Proposed that Article V, Section 2, be amended as follows:

> Proposed that Article V, Section 1, of the Constitution be amended by striking out the word "December" and inserting in its place the word "May."

The question of changing the location of the library was brought up and laid over for further discussion at the next meeting.

The transfer of Dr. R. D. Wright from the Montana Medical Association was accepted.

SKAGIT COUNTY MEDICAL SOCIETY

Pres., I. E. Lloyd; Sect'y, S. W. Holten

Skagit County Medical Society held its quarterly meeting at Sedro-Woolley, Dec. 1. Dr. Irving E. Lloyd, of Mount Vernon, president of the society, acted as chairman.

Dr. John Blackford, of Seattle, delivered the principal address of the evening on the subject, "Diseases of the Gallbladder and Gastrointestinal Tract." Other speakers included Drs. H. G. Willard of Tacoma, Roger Anderson of Seattle, O. A. Thomle of Everett, and Mr. Robert O. Jones of Seattle.

WHATCOM COUNTY MEDICAL SOCIETY

Pres., F. C. Rykken; Sect'y, McKinnin

Whatcom County Medical Society, at its meeting in Bellingham, Dec. 6, elected the following officers for the ensuing year: President, Dr. Connor O. Reed, Bellingham; First vice-president, Dr. L. P. McCalla, Bellingham; Second vice-president, Dr. C. S. Hood, Ferndale. Third vice-president, Dr. J. P. Bilodeau; Secretary, Dr. B. V. Mounter, Bellingham; Treasurer, Dr. L. A. Greenwood, Bellingham.

WHITMAN COUNTY MEDICAL SOCIETY

Pres., D. T. Ford; Sect'y, J. E. Preucel

The regular meeting of Whitman County Medical Society was held at the Commercial Hotel, Colfax, Wash., Dec. 6, 1926.

The chief topic of the business meeting, which preceded the scientific program, was on the various ways of enlightening the general public on the "Importance of Preventive Medicine."

The scientific program consisted of very interesting and instructive papers, by Drs. J. D. Leuty and E. N. Layton on "Diagnosis, Treatment and Prevention of Scarlet Fever." The subject was discussed from several angles and many questions were asked and answered on the result of Dick and Dick immunizing toxin.

Dr. Paul G. Weisman reported three recent scarlet fever cases and favorable result with the Dick antitoxin treatment.

The next meeting will be held about the first part of April, 1927.

PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

Pres., E. F. Chase; Secty., M. J. Morriss

The regular monthly meeting of the Puget Sound Academy of Ophthalmology and Oto-Laryngology was held at the Virginia Mason Hospital, Seattle, December 21. The meeting was callled to order by the president Dr. Chase. The minutes of the last meeting were read and approved.

Dr. L. L. McCoy presented the histories of two unusual eye cases. First was a case of furrow keratitis or marginal dystrophy of cornea.

The second case was a child, two and a half years of age, with a high grade myopia. This case was unusual, in that such high myopia is seldom seen in patients this young.

Mr. King, of the Gray Bar Electric Company, demonstrated the use of their audiometer and audophone.

The paper of the evening was read by Dr. Henry M. Cunningham of Vancouver, B. C., the subject being "Bronchoscopy." He reported twenty-six cases of stricture of the esophagus with one fatality. Anesthesia is necessary for most operators. Morphine should never be given with general anesthetic. The details and technics of various pathologies were discussed. Early extraction of foreign body is necessary but not at expense of adequate preparation. The paper was discussed by Drs. Dowling, McNamee, Mathews, and Wanamaker.

A motion of thanks to Dr. Cunningham was moved and carried for his very excellent paper. Also a vote of thanks to the Virginia Mason Clinic for allowing the Academy the use of their Clinic as a meeting place of the Academy.

MEDICAL RESERVE CORPS

The following changes of assignment status of members of the Medical Reserve Corps are announced:

First Lieut. Henry F. Riedel, Med. Res., St. Vincents Hospital, Portland, Ore., relieved from assignment to 82nd Evacuation Hospital, and re-assigned to General Hospital No. 139, Zone of the Interior, as Surgical Ward Officer.

Major William H. Payne, Med. Res., Toppenish, Wash., assigned to 82nd Evacuation Hospital, 3rd Army, as Executive Officer and Fire Marshal.

First Lieut. Clyde W. Countryman, Med. Res., St. Luke's Hospital, Spokane, Wash., relieved from assignment to 349th Medical Regiment, and re-assigned to 85th Evacuation Hospital, 3rd Army, as Medical Ward Officer.

Major Charles W. Jones, Med. Res., 114 Sherman Ave., Olympia, Wash., assigned to 70th Surgical Hospital, 6th Army, as Operating Surgeon.

Major Noble W. Jones, Med. Res., 641 Market Street Drive, Portland, Ore., attached to General Hospital No. 46, Communications Zone, as Chief of Laboratory Service.

Major Albert Lessing, Med. Res., Cascade Sanitorium, Leavenworth, Wash., assigned to 84th Evacuation Hospital, 3rd Army, as Executive Officer and Fire Marshal.

Capt. James E. Hunter, Med. Res., 1114 Boylston Ave., Seattle, Wash., assigned to General Hospital No. 50, Communications Zone, as Medical Ward Officer.

First Lieut. Barton E. Peden, Med. Res., Chiloquin, Ore., relieved from assignment to 96th Division, and re-assigned to General Hospital No. 50, Communications Zone, as Medical Ward Officer.

First Lieut. Maurice A. Kenney, Med. Res., St. Vincent's Hospital, Portland, Ore., relieved from assignment to 82nd Evacuation Hospital, and re-assigned to General Hospital No. 139, Zone of the Interior, as Surgical Ward Officer.

PHYSIOTHERAPY

(The widespread interest in physiotherapy will direct attention to this report of the Committee of Education of the American Medical Association.—Ed.)

COUNCIL OF PHYSICAL THERAPY

PRELIMINARY REPORT OF THE COMMITTEE ON EDUCATION*

Such educational opportunities as are necessary to teach the proper practice of the various methods of physical therapy may be divided into three heads; (1) premedical school courses; (2) courses in medical schools; and (3) courses of information for the practicing physician.

PREMEDICAL COURSES

The Committee believes that courses in biologic physics should be added to the curriculums of premedical schools. This recommendation is in agreemen with a similar recommendation made several years ago by a committee of the National Research Council. The Committee realizes that this will be a slow process, owing to the lack of properly qualified instructors.

While the selection of the subject matter for courses in biologic physics must always be made by the men responsible for such courses, the Council on Physical Therapy will be glad to act in an advisory capacity in laying out the broad outlines of the courses. The chairman of the Committee on Education has already received a request for such advice from a state university.

As the courses in biologic physics are concerned with the application of physical principles to biologic problems, greater emphasis should be placed on the biologic needs than on the physical side of the subject. The instructor should have, therefore, a broad knowledge of the biologic phenomena that may be attacked through physical methods. He should be primarily a trained biologist rather than a trained physicist.

Courses in physics naturally are planned and taught by physicists, who usually look on this subject as a branch of applied mathematics. They are interested in training students to make physics their life work. Great emphasis is placed on the exactness of the methods of physical investigation. It would be highly advantageous to the students and to the department if, in the regular physics courses, physical principles were more frequently illustrated by biologic material. The biologically minded student might have a different attitude toward physics if he realized that many of the fundamental principles in physics were discovered and elaborated by biologists for use in their biologic investigations, and that, as a result of these contributions, many biologists have been inscribed in the history of science as physicists.

MEDICAL COURSES

The courses in the medical school should be open to upper classmen and graduate students, and should be given by men who are familiar with physical principles, but whose primary interest is in therapeutic applications. The courses would best be given in connection with hospital clinics.

COURSES FOR PRACTITIONERS

Information for practicing physicians could be given, first, by a series of carefully prepared articles published in the current scientific magazines, and, second, by encouraging the presentation of papers on physical therapeutic topics before medical societies. They should not be of the usual case-report type, nor should their content be a summary of contributions to the progress of medicine. The purpose of the papers should be a purely educational one .

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* This preliminary report of the Committee on Education is to be followed by additional reports of the medical aspects of education in physical therapy.

BOOK REVIEWS

Edited by **KENELM WINSLOW, M.D.**

The Practice of Medicine. By A. A. Stevens, M. D., Professor of Applied Therapeutics in the University of Pennsylvania. Second Edition, entirely reset Octavo of 1174 pages. Philadelphia and London; W. B. Saunders Company, 1926. Cloth. $7.50 net.

It will be remembered with what success the author summarized the essential facts in his little Manual of Medicine, which was of such value for students in preparing for examination and which antedated the present mature Practice of Medicine by many years. In the second and latest editions the same ability to present in concise form all the more necessary facts in symptomatology, pathology, diagnosis and treatment is markedly evident. The result is a textbook of medicine of very uniform excellence, quite up-to-date and showing wise conservatism in therapeutics.

Textbooks lag years behind the best current medical knowledge in many instances, as in the case of gallbladder trouble. Heretofore, this most common of all chronic digestive disorders has received the most inadequate handling, and has been generally described under the head of cholelithiasis and so confused in its symptomatology with gallstone colic, just as the five or six times more frequent duodenal ulcer has been given second place to the comparatively infrequent gastric ulcer.

In the present volume there is a very fair clinical description of chronic cholecystitis, although certain types are omitted, such as that simulating pleurisy, and the characteristic tender spot under the right scapula is not noted, while the frequency of gallstones (70 per cent) in cholecystitis is set at much too high a figure. Also in differential diagnosis, the possibility of kidney lesions should always be considered, although not mentioned herein. The author is perhaps too conservative when he adds that the method of Graham and Cole "promises to be helpful in diagnosis." This is in contrast to the statement frequently made that this method is of more value than the opinion of the surgeon who holds the suspected gallbladder in his hand. The reviewer has yet to see any faulty diagnosis of cholecystitis based on absence of a gallbladder shadow, when the dye has been given intravenously. As a whole, the clinical description of cholecystitis is far and away better than that to be found in most textbooks.

Under peptic ulcer it would have been wiser to have described gastric and duodenal ulcer separately, rather than under one head. While they have many features in common, in diagnosis one can usually separate them by history and x-ray, and this is essential for proper treatment.

One reason that the presence of duodenal ulcer, although very common, has not been more generally discovered, is because in the best textbooks (as Osler and McCrae's Practice, 1920) the descriptions of gastric and duodenal ulcers are so mixed that one does not get a clear idea of either of them. Then, as a gastric ulcer is a potential carcinoma, the treatment of the former should usually be surgical.

New matter in this edition includes primary meningcoccic bacteriemia, disseminated erythematous lupus, tularemia, epidemic jaundice, Dick test and etiology of scarlet fever, coccidioidal granuloma, lipodystrophy, agranulocytic angina, uveoparotid fever, vasomotor rhinitis, occlusion of the coronary arteries, melanuria, Epstein's nephrosis, sickle cell anemia, Ayerza's disease, chronic sclerosing osteitis, acrodynia and Horner's syndrome.

Coccidioidal granuloma, although rare, occurs chiefly on this coast and its description is not to be found in most textbooks. A case has recently been reported in Seattle by Odland at the King County Hospital. This looked like a fungus infection and there was also involvement of the lungs.

It is a pleasure to note that Rosenow's serum is given favorable consideration in both the treatment of acute poliomyelitis and epidemic encephalitis. The textbook, taken as a whole, is a worthy contribution and valuable addition to the standard treatises on the practise of medicine.

Winslow.

A Bipolar Theory of Living Processes. By George W. Crile. Edited by Amy F. Rowland. 405 pp. The MacMillan Company, New York, 1926.

According to the bipolar theory of life, each cell is a battery. The nucleus is the positive and the cytoplasm the negative pole. Oxidation in the nucleus increases the potential and discharge takes place, the process being constantly repeated. The lipoid membranes between the nucleus and cytoplasm and between cells serve for the accumulation and discharge of electricity.

The author has satisfied himself by experimental work that the brain is the positive pole and the liver the negative pole of the body and from this it easily follows that, if either the brain or the liver is removed, the battery is destroyed and the body dies. Before developing the bipolar theory the author tried in vain to solve the riddle of life by means of study of circulation and respiration, blood chemistry and cytology, but it was only after he began his biophysical studies that he began to see light.

Perusal of the book convinces one that it is the work of an active mind. Much experimental work has been done and the literature has been searched for facts to support the theory, and sometimes the enthusiasm of the author carries him too far. For example, on page 28 he classifies "x-ray scars, adenomata and fibroid tumors" as precancerous tissue. It is refreshing, however, to find near the end of the work the statement that "We concede that our thesis has not been finally proven. Final proof is lacking regarding practically every point." The book may prove interesting to a few readers and is likely to be used by the poorly trained and unscrupulous as a basis for therapeutic devices.

Griswold.

General Medicine. Practical Medicine Series, General Editor, Charles M. Mix, M. D. Edited by George H. Weaver, M. D., Lawrason Brown, M. D.; Robert B. Preble, A. M., M. D.; and Ralph C. Brown, B. S., M. D. $3.00. Series 1926. The Year Book Publishers, Chicago.

This is a most admirable summary in that it is not too extensive, for the editors have shown such excellent judgment in selecting the really valuable and outstanding work of the preceding year in their various special departments of medicine. One might select enough material to make a whole library, if one's discrimination was not of the best. This volume reviews diseases of the chest, infectious diseases and endocrinology, diseases of the blood and blood making organs, of the heart, vessels and kidney, and of the digestive system and metabolism.

There is a splendid review of Aschoff's article of last January on the etiology, chemistry and differentiation of the various kinds of gallstones and, as this appeared in German, it may not be generally familiar. He shows that ordinary stones are due to infection and are made up of cholesterin, inflammatory products, calcium and pigment, and are rather soft. Pure cholesterin stones are hard, small, usually single and depend upon metabolic disturbances and not upon infection which is often absent. Black, small, mulberry-like stones are formed of pigment and not dependent on cholecystitis at all, but upon disturbances in pigment metabolism. Then there are the peculiar stones only found in the bile ducts. A most illuminating article.

There is a review of the various papers on cholecystography during the past year. A gradual perfection of the dye test is noticeable and, since the publication of this book, Kendall at Rochester has made a new substance that may be given in solution by the mouth, without the production of nausea and diarrhea, and yielding as satisfactory results as the dyes in use. The outcome of cholecystography seems to be that the internist is shorn to a large extent of his usefulness in making a diagnosis in obscure cholecystitis. Now the x-ray man can make an accurate diagnosis without any knowledge of the case. The only recourse for the internist is to be his own roentgenologist.

Preble's review of heart diseases is admirable and his editorial comments are apt and often caustic. Thus, in many respects, an excellent paper by T. F. Cotton on exercise as of diagnostic and prognostic value in heart disease is quoted at some length. Preble, however, justly states that in some cases of organic disease there is little change in exercise tolerance, and in other cases there is heart failure with no evidence of organic change. Also, in reply to Cotton's advice to give iodides and later mercury and arsenic in syphilitic aortitis, Preble rejoins that arsenic and mercury have no part in such treatment and ends by saying, "Don't kill the patient while trying to cure his syphilis." There is nothing like having the last word and, apropos of this, it would seem to the reviewer that the stage at which one can treat luetic aortitis is the criterion. In a large experience in the later stages, such as one sees at the county hospital, no disease is more hopeless with any treatment. Killing the patient may be the most merciful treatment after all.

These little volumes of The Practical Medicine Series should be read by every physician as they do not task one's patience. One is kept up to the times, and has the advantage of wise editorial comment, not supplied in ordinary reading of medical articles.

Preble remarks as to care of a patient with cardiac disease: "The prognosis of heart disease is largely a matter of dollars and sense." Winslow.

Pneumoconiosis (Silicosis), with Illustrations. A Roentgenologic Study with Notes on Pathology. By Henry K. Pancoast, M. D., Professor of Roentgenology, University of Pennsylvania, and Eugene P. Pendergrass, M. D., Associate in Roentgenology, University of Pennsylvania. First Edition, 186 pp. $4.00. Paul B. Hoeber, Inc., New York, 1926.

The subject of pneumoconiosis or silicosis has been studied very extensively in South Africa, Australia and Great Britain, due to the hazards of dust producing industries. American contributors to the subject have been limited. Free silica, which is the chief offender in the production of this disease, is encountered in the dust developed in hard rock mining, specially in gold, copper, zinc, lead, silver, nickel and cobalt mines. Anthracite coal mining is more likely to produce pneumoconiosis than bituminous mining.

The presence of irritating dust particles in the pulmonary alveoli sets up a catarrhal process with the proliferation of certain cells; some of these are phagocytic and incorporate the dust particles, and are termed "dust cells." Silica dust seems to provoke their proliferation. These cells enter the lymphatic system, form into groups called pseudotubercles, with formation of fibrous tissue. Fibrosis is the essential pathologic process in pneumoconiosis, and upon it and lymph-block depend the characteristic roentgenologic features. The liver, spleen and kidneys at times show fibrous areas due to silica. Silicotic lungs are predisposed to pulmonary infections, especially tuberculosis.

The writers take up the roentgenologic study in a very comprehensive manner, taking in all types of dusts. The progress of the condition is divided into three stages, depending upon the amount of fibrosis present, which involves all structures entering into the lungs and pleura, and the type and character of the pseudotubercles. The volume is profusely illustrated and splendidly written. For those who are specializing in roentgen work and in chest diagnosis or treatment, this book should be in their libraries. Baumgarten.

Physical Therapy in Diseases of the Eye, Ear, Nose and Throat. By Abraham R. Hollender, M. D., Attending Otolaryngologist, American Hospital of Chicago, etc., and Maurice H. Cottle, M. D., Attending Otolarynologist, Illinois Masonic Hospital at Chicago, 307 pp., $5.00, The Macmillan Company, New York, 1926.

Part one of this book briefly discusses the various electrophysical agents. In five following parts the

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application of these agents is presented in the treatment of diseases of the organs of special senses. Radiant heat, ultraviolet and diathermy are the agents mostly employed. Their application in different diseases is given in more or less detail. The authors make frequent use of diathermy by means of a special head band and electrodes, by which heat may be concentrated in any desired locality about the head. Thus, in the treatment of sinusitis, inflammation of the affected cavity can be effectively treated by concentration of heat as desired. Considerable attention is given to the treatment of difficult hearing by this application of diathermy with results that seem to promise permanent benefit. A commendable conservatism is displayed in the recommendation of these special methods, they being employed to supplement other recognized methods of treating the forms of disease under consideration. In perusal of this book one is impressed with the belief that these electrotherapeutic measures may be of real assistance when judiciously used in the treatment of the various diseases under consideration.

Physiology and Biochemistry in Modern Medicine. By J. R. MacLeod, M. B., L.L. D. (Aberd.), D. S. (Tor.), F. R. S. Professor of Physiology in the University of Toronto, Toronto, Can., etc., assisted by Roy G. Pearce, A. C. Redfield, N. B. Taylor, and J. M. D. Olmstead and by others. Fifth Edition. With 291 illustrations, including 9 plates in color. 1054 pp. $11.00. The C. V. Mosby Co., St. Louis, 1926.

This edition has been enlarged so that it may be used as a textbook of physiology for students of medicine. A section on the physiology of the special senses has been contributed by Dr. J. M. D. Olmstead. Dr. A. L. Redfield has included nerve muscle physiology in his section on the neuromuscular system. This book contains the physiology that is most useful at the bedside and the practitioner who masters it will be a much safer guide to his patient than the one who relies mainly on publications depicting only the clinical side of medicine. A rational therapy must be based largely on physiology and it seems unfortunate that the medical student is forced to limit his study of this subject mainly to the early years of his preparation for practice and too often fails to increase this knowledge after graduation. Dr. MacLeod is to be commended for producing such a readable and reliable work. It is well up to date and deserves a place in the library of every one practicing any branch of medicine or surgery.

Griswold.

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ORIGINAL CONTRIBUTIONS

OBSERVATIONS ON DRAINAGE*

PARK WEED WILLIS, M.D., F.A.C.S.
SEATTLE, WASH.

Drainage is a live subject for every surgeon. The questions that arise are whether or not to place any drainage, what kind of drainage, how much, and when it should be removed. The decision of these questions is often of momentous importance to the patient. A little drainage, like knowledge, is a dangerous thing, while a lot of drainage is often useful. When a little drainage is used it is often because the surgeon is in doubt whether or not to drain, or possibly it may be that he does not realize the importance of abundant drainage. It is for these reasons that a little drainage is referred to as a dangerous thing. With better technic and a better understanding of bacteriology the tendency is toward its less frequent use. Drainage is very important when it is necessary, and must be sufficient in quantity if it is to be of value.

Drainage material, instead of assisting, is sometimes harmful either by obstruction or irritation. For instance, an abscess may have a small opening made in it and then have that small opening plugged with gauze which is supposed to be a drain but which really closes the opening. Often, too, a lacerated or contused wound will have a little piece of gauze in it, when a better plan would be wide spacing of the sutures. The gauze here irritates and often hinders drainage. In empyema we sometimes find a little drain between ribs, when a piece of at least one rib should be removed. In abdominal surgery I am convinced that drainage has been used altogether too frequently and at the same time too sparingly when it is used. These observations have made me feel that I would like to express my own views in reference to the subject of drainage. Please understand, however, that this is not intended as an exhaustive paper, but rather as a general discussion almost solely the result of personal observation and practice.

Mr. Dooley said that he did not like the idea of having instruments left in his abdomen because they rattled when he walked. The surgeon might also have a complaint, viz, the loss of the instruments. If these were the only considerations in leaving foreign bodies in the abdomen, sponges and instruments could be left there practically with impunity. However, we know that when a sponge is left in the abdominal cavity it usually causes much trouble, due to the inflammatory reaction in the attempt to eliminate it. When one is questioning his own mind about the use of drainage, he should remember the effect of a gauze sponge accidentally left in the abdomen, for a gauze drain in the same location does not have any different effect because it happens to protrude from the wound.

Almost every kind of material has been used at various times for drainage. The most common and perhaps the most useful materials are rubber and glass tubes, rubber dam, rubber gloves, gauze, lamp wicking and suture material.

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* Read before the Meeting of North Pacific Surgical Association, Vancouver, B. C., Dec. 10, 1926.

Advantage should always be taken of gravity in drainage. The patient's position can be varied according to the necessities of the individual case, thus taking advantage of gravity.

A recent work on operative surgery advises drainage in cholecystectomy. What valid reason can be given for such advice? It is possible that, where the oozing of blood is considerable, or the oozing of bile is profuse, drainage may be excusable, but even when there is considerable bile oozing from the liver, it is my opinion that the patient is better off without drainage. The drain simply increases the amount of irritation with consequent secretion of bile and serum, while if the wounds are left alone without the handicap of a foreign substance, nature will secure prompt healing. Careful hemostasis and the proper ligation of the cystic duct should usually eliminate the necessity for drainage following cholecystectomy. In other words, we should not use a drain unless there is something to drain.

An appendectomy does not ordinarily require drainage, although of course, if the appendix is ruptured and an abscess formed drainage is essential, or if the appendix is ruptured and there is a general purulent peritonitis, a large amount of drainage is essential and, if used in sufficient quantity and intelligently placed, it can be made a life saving measure. On the other hand, if the appendix is not ruptured, although much swollen with inflammatory lymph on the outside of it, the abdomen can be closed without drainage. It has been my experience, however, that when this is done an abscess frequently develops in the abdominal wall. Apparently the tissues in the abdominal wall are less able to care for the infection than the peritoneum, but it is certainly better to avoid drainage of the peritoneal cavity when the infection can be cared for without it. The pus in chronic salpingitis is usually sterile, and therefore drainage is unnecessary even though they are ruptured in removal.

In wounds in the tissues other than the cavities it is also much better to do without drainage when possible. Hemostasis should be complete. Mass ligation should be avoided. Traumatism of the tissues should be minimum. All dead spaces, as far as possible, should be eliminated, and if there are any pockets where fluid may collect, it is well to make openings through the skin directly into them. In stitching the wound no attempt should be made to make it beautiful by bringing its edges too closely together at every point. Then a firm dressing can be applied which will eliminate remaining dead spaces and will hold the tissues at rest. Serum which necessarily oozes from a large cut surface will escape between the sutures into the dressing and there will be all the advantages of drainage without the irritation produced by the insertion of drainage material into the wound.

In the case of compound fractures very little suturing of the external wound should be done. In fact, it is often necessary to enlarge the opening and then put on dressings to absorb any serum which may ooze from the wound. In the case of a general purulent peritonitis such as is found sometimes from a ruptured appendix, the drainage must be very abundant, and it is always better to avoid having gauze in direct contact with serous surfaces. For this reason the cigarette or Penrose drain is very useful, also at times a rubber tube. The rubber glove is one of the best materials for drainage. In a recent case of an elderly woman with a ruptured appendix and a general purulent peritonitis, I used fourteen cigarette drains, two rubber gloves and two drainage tubes. These were placed in such a way that only the rubber tissue was in contact with the peritoneum. In conditions of this kind it is always necessary to have a drain extending down into the bottom of the pelvic cavity.

When drains are used so extensively we naturally expect a postoperative hernia but, if the patient's life can be saved, a postoperative hernia is a small problem and easily corrected. In a case of this kind the removal of the drainage is very important. Usually it is not necessary to remove any drain under five days. At the same time, if there is a large quantity of drainage material used, some of the center pieces can be removed earlier, but this should be done in a very gentle manner and usually the outside drain next to the intestines should not be removed for five to seven days and sometimes even longer. Usually, however, all the drain can easily be removed and without any damage in five to eight days. When the drainage is gradually removed it is usually not necessary to reinsert it because it has been so placed as to make the external opening larger than the area drained. Sometimes resinsertion of a tube is necessary and gauze can be loosely placed in the wound.

An abscess should be opened widely so that drainage will be perfectly free. Ordinarily it is not necessary or even wise to insert any drainage material, it being much better to have the opening sufficiently large so that with hot wet applications the drainage will be perfectly free without the insertion of any foreign material. Usually in any infected area the wound will heal quicker with a large opening than it will with a small one.

Wounds of the scalp practically never require the insertion of foreign material for drainage. On the other hand, they should rarely be closely stitched and in contused and lacerated wounds of the scalp there should be as few stitches as possible. In fact, with badly bruised wounds of the scalp it is better not to have any stitches unless the separation is very wide.

Two patients with compound fractures who came into the hospital about the same time illustrate the wisdom of doing without drainage, but at the same time leaving the wounds wide open for the discharge of serum. Both of them were apparently compounded from within, as the broken end of the tibia was protruding in each case, but one of them had much external bruising and there was in this case about four or five inches of the tibia projecting through the skin. The bruising was so extensive that I enlarged the wound below the protruding fragment and then closed only a small part of it above, leaving the ragged, irregular wound wide open. The leg was cleansed in each of these cases, sterile dressings were applied, and then a cast applied over all without a window. One cast was left on for about eight weeks, when it was removed. The dressings were dry and the wound completely healed.

The other patient, in whom the contusion of the leg was greater, began to run a little temperature in about a week. I removed the cast and found the wound looking well except for a little irritation from discharge immediately around it. It was necessary to change this cast and dressing two or three times within the next week or two on account of poor alignment. Finally a good alignment was obtained and the dressing was then left on for several weeks in the cast. When this was removed the healing was almost complete, and was soon completed by direct application of adhesive plaster, the best treatment for ulcer of the leg. I feel that if anything, gauze, tube, rubber or other substance had been placed in either of these wounds, it would have caused sufficient irritation to have prevented the good results obtained.

The problem of drainage as I see it is to drain only when there is something to drain. The peritoneal cavity should not be drained just because something infectious has been removed but drainage must be used, and adequately, if there is an abscess with a pyogenic membrane or a general purulent peritonitis.

CHOLECYSTITIS*

A REVIEW OF CASES ADMITTED TO SWEDISH HOSPITAL DURING FIVE YEARS

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SEATTLE, WASH.

Between August 1, 1921, and August, 1, 1926, two hundred and sixty-six cases of cholecystitis were operated upon. A study of the records of these cases has brought out some points of considerable interest. It is proposed in this paper to discuss the results obtained from the standpoint of the immediate mortality and the end-results.

Of the 266 cases operated upon seventeen ended fatally, a mortality rate of 6.3 per cent. A further study of these fatal cases shows that they may be divided into two classes. In the first group, consisting of six cases, the causes of death are recorded as peritonitis one, pneumonia two, hemorrhage one, cerebral hemorrhage one, and pulmonary embolus one. In other words, these six cases give a mortality rate of 2.2 per cent which fairly represents the risk attendant upon all abdominal operations.

The remaining eleven cases had one symptom in common, jaundice at some time during their stay in the hospital. I think it may be fairly said that this 4.1 per cent represents the increased hazard, due to the presence of biliary duct infection. It is to this group that I wish to direct your attention, for it is only by a more careful study of these cases and a more intelligent and painstaking preoperative care that we may hope to reduce the mortality in gallbladder surgery.

In the first place, it should be laid down as a general rule that the jaundiced patient is but rarely the subject for emergency surgery. The advantages of preoperative preparation usually exceed the dangers of delay.

The essential significance of jaundice is a disturbance of that part of the hepatic function which has to do with the elimination of bile pigment. In this respect the liver resembles the kidney in its relation to urea. Therefore, jaundice may be functional or obstructive. The functional type may depend on the inability of the liver to excrete its normal allotment of bile pigment or, in case the formation of pigment is excessive, the normal liver may not be able to adequately excrete it. The latter condition prevails in hemolytic jaundice.

In the obstructive type the block may be anywhere in the duct system, either within or without the liver. Intrahepatic obstruction may be due to edema and inflammation of the smaller ducts. Extrahepatic obstruction is caused by stone, stricture, carcinoma and pancreatitis, and clinically is frequently complicated by infection. Obstruction of the common duct not only prevents the exit of bile but also impairs the activity of the liver, so that in this condition functional and obstructive jaundice may be coexistent. Cholecystitis may be the cause of functional jaundice but repeated attacks of colic and jaundice are usually caused by stone. Within the past few years the mechanism and pathologic significance of jaundice have been in large part explained and a method has been devised for measuring the pigment content of the blood.

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* Read before the Meeting of North Pacific Surgical Association, Vancouver, B. C., Dec. 10, 1926.

Bile pigment is formed in large part outside the liver and carried to it for excretion. Failure of excretion causes pigment to accumulate in the blood, and when the quantity rises above the threshold value of the kidneys, it appears in the urine and later passes out of the blood vessels into the tissues. Therefore, in biliary obstruction the degree of jaundice is dependent on variable factors, namely, the extent of the obstruction, the threshold value of the kidney, its capacity to excrete pigment and the permeability of the blood vessels to pigment, so that jaundice becomes an imperfect manifestation of increased pigment content of the blood.

The Van den Bergh[1] test has shown that bile pigment is normally present in the blood stream in concentrations running from 1 to 500,000 to 1 to 1,000,000. It becomes important, therefore, to measure accurately the degree of bilirubin retention, since by this means we may demonstrate latent or occult jaundice.

The estimation of bilirubin retention through the icterus index or Van den Bergh test is of unquestioned surgical value. It serves as a valuable method of differentiating gallbladder and bile duct disease from ulcer or renal colic. There is now no reason for argument as to whether a patient is jaundiced or sallow. It can be demonstrated beyond doubt. Finally, we have a means of measuring accurately the degree of the jaundice, by which we can follow the progress of this disease and choose a favorable time for intervention.

The liver is the main site for urea formation and bile excretion, while the kidneys are the main exit for urea. In obstructive jaundice they attempt to take over the excretion of bile as well. Long continued jaundice, therefore, tends to set up a toxic nephritis with an accumulation of urea as well as the bile pigment in the blood. Also in jaundice there is a well known tendency to bleed. In my experience this cannot always be measured by the clotting time of the blood and does not always run in proportion to the intensity of the jaundice.

The jaundiced surgical patient, therefore, presents a complicated problem, in which disturbance of the kidneys and pancreas, dehydration, malnutrition and sepsis all have a share, as well as the actual interference with the liver. While the information to be derived by laboratory tests, including chemistry of the blood and urine, is of much value and they are never to be omitted, still they do not constitute a short cut by which a diagnosis or an estimation of operative risk can be arrived at. Knowledge of the patient gained through thorough clinical study must still be considered of greater importance. The most conclusive evidence of obstructive jaundice is the persistent absence of bile pigment from the stools.

It should be our aim, then, to study these cases more carefully both from a clinical and a laboratory standpoint, and to subject them to as thorough a preliminary treatment as our knowledge of the case dictates, building up the glycogen reserve with intravenous injections of glucose and insulin, filling the tissues with fluids, and fortifying the blood with injections of calcium chloride and transfusions. When the blood urea has come down to somewhere within the normal limits and the icterus index is steadily declining, we should select our time of operation, being cautious, however, not to unduly prolong the period of preparation and pass over the opportune time for surgical intervention. Here the judgment and experience of the surgeon must remain the best guide. Also his experience must guide him in the choice of procedure in the individual case.

Given a jaundiced patient who has been brought to the opportune point of operability, I believe the operation should be completed in one stage when possible rather than divided into steps. There are some instances, I admit, of obstructive jaundice in patients who are poor risks, where the gallbladder is found to be distended and full of stones and where bile flows freely when it is opened, where it is the part of wisdom to do a preliminary cholecystostomy. But in general, secondary operations on the biliary tract are not desirable. To drain the gallbladder or comon duct and intentionally leave a stone for later removal is not for the best interest of the patient. In most instances the diseased gallbladder and stones in the common duct can be removed at the same time. After this procedure a tube should be put in the hepatic duct.

If we will study and handle our cases of biliary duct infections along the lines here indicated, I believe in the future we will be able to reduce materially this excessive 4.1 per cent of mortality.

Gallbladder surgery has been increasing tremendously in the last few years, due largely to improved methods of diagnosis. With this increased amount of work the fact is gradually becoming apparent that our end-results are not proportionately as good as formerly, when our diagnosis of cholecystitis was more restricted. Increasing experience shows that it is among those cases, whose symptoms vary most from what used to be considered the typical gallbladder syndrome, that the majority of unsatisfactory end-results occur.

Eusterman[2] has recently given a very elaborate classification of the clinical types of gallbladder disease. He divides them into seven groups as follows. (1) The latent type characterized by distress after excessive eating, (2) the pleurisy type with chest pain as the dominant symptom, (3) the colic type, (4) the ulcer type, (5) the chronic indigestion type, (6) the crisis type, (7) the left sided type.

In a recent paper Judd[3] reports that in the mild types without definite history of colic 13 per cent gave unsatisfactory results following the operation, and suggests that this is possibly due to a persisting infection in the bile ducts.

I wish to draw your attention to some studies which I have made on this group of cases. For clinical purposes gallbladder cases may be divided into two groups.

1. The larger group in which the symptoms are typical colic or colicy pains, indigestion, flatulence, hypochlorhydria or complete anacidity. In our series 69 per cent came in this class and in this group no unsatisfactory end-results have been traced.

2. In this group there are hyperacidity, pain coming on one to two hours after meals, hunger pains, night pains, food relief and soda relief. In a word, the typical duodenal ulcer syndrome. Diagnosis is usually arrived at in this group by laboratory methods, chiefly by the x-ray, by excluding ulcer and sometimes by the positive demonstration of cholecystitis by the Graham Cole dye method. In this series 31 per cent came more or less definitely under this group, and all of the unsatisfactory results that we were able to trace belonged very definitely to this class.

These persons were usually very bitter in their criticisms of surgery and surgeons. "My doctor told me I had gallbladder trouble and if I would have my gallbladder removed I would be well. I took his advice and was operated on and now I have the same pain that I had before." These people wander from doctor to doctor, and generally about the time they are beginning to get better they are in the hands of some cultist who gets the credit for a cure and surgery gets a corresponding amount of discredit.

I have had the opportunity of examining several of these cases after operation and have come to the conclusion that the seat of their distress is in the walls of the duodenum. Both before and after operation I have been able to examine some of them with a fluoroscope while they were having pain, and have seen the bolus of barium forced violently back and forth from one end of the duodenum to the other in a perfect delirium of hyperperistalsis and reverse peristalsis until the spasm relaxes, the bolus passes down, and the pain subsides to be followed in a few moments by another paroxysm.

My conception of the pathology is that in those cases, where the duodenum lies in close contact with the gallbladder, the inflammatory process spreads by continuity to the duodenal wall and sets up changes which so interfere with its intrinsic motor mechanism as to cause recurring painful spasms. This idea is largely theoretical. I have never been able to get sections of such a duodenal wall to demonstrate evidences of the chronic inflammation. However, working on this hypothesis, I have been able to correctly predict at the time of operation the persistence of pain in some cases.

Furthermore, the results of the postoperative treatment which has been carried out substantiate this theory. This brings me to the point of how these cases should be handled. Much can be done at the time of operation by thorough dividing of all adhesions and painstaking covering of all raw surfaces with healthy peritoneum. Particularly in those cases where the duodenum is firmly plastered to the whole length of the gallbladder. I feel, also, that it is a mistake not to remove the appendix. For the chronic appendiceal disease is so often associated with cholecystitis that an appendix left behind may very well incite painful duodenal spasm.

The main answer to this problem lies in the postoperative care. The patient should not be discharged as soon as the wound is healed and left to his own devices when he is dismissed from the hospital. It should be explained that, while his trouble was primarily due to a diseased gallbladder, the inflammation has spread to neighboring organs so that much time and careful treatment will be necessary before he fully regains his health. Then he should be referred to a competent internist, who will put him on a definite regimen, consisting of frequent small feedings of bland, nonirritating foods, supplemented occasionally by antispasmodics, such as belladonna and benzyl benzoate, and followed by gymnastic exercises and careful bowel regulation. In a word, a treatment based on the same principles as are the foundation of the Sippey medical treatment of duodenal ulcer.

I have in a few cases reopened the abdomen, separated the adherent duodenum from the under surface of the liver and covered all raw surfaces with omentum. But I feel this should rarely be necessary. If this postoperative care is carried out, I believe we will materially shorten convalescence for these patients, and save gallbladder surgery from considerable unmerited criticism, for the removal of the gallbladder is the first requisite for a cure of such cases.

BIBLIOGRAPHY

1. Van den Bergh, A. A. H.: De Gallenfarb Stoffe in Blute. Lyden, 1918.

2. Eusterman: Transactions Interstate Postgrad. Med. Ass., 1925.

3. Judd: Clinical Versus Pathologic Cholecystitis. Collected Papers, Mayo Clinics, 1925.

DUODENAL FISTULA

ITS TREATMENT AND REPORT OF A CASE*

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There has been comparatively little written about this condition. Up to 1923 only twenty-eight cases could be found in the literature. Since that time, however, there has been a great deal of investigation and much attention has been paid to the toxic effect of duodenal fistula and upper intestinal stasis. Operative trauma is the chief etiologic factor, especially that following cholecystectomy. Injuries to the hepatic and common ducts may be due to carelessness or to unrecognized anomalies. If such injury occurs, it may be repaired at once, but if unrecognized, it usually requires secondary operation for the purpose of doing choledochoduodenostomy. It would be interesting to know how many of these operations are followed by duodenal fistula because of the difficulty of mobilizing the duodenum which is often covered and bound down by adhesions from the former operation. Usually there is considerable retraction of the hepatic stump, plus rotation of the liver. These are conditions conducive to traction on the suture line. If in addition a drain is inserted, it is not remarkable if a fistula should follow.

The duodenum may also be injured during a nephrectomy by being included in a clamp or in the course of a cholecystectomy. The gauze drain is probably the chief causative factor in producing fistula following operations upon the duodenum. In these cases the fistula appears on the fourth or fifth day. It has occurred as late as three weeks. This fact is a condemnation of the use of drains or gauze packs in duodenal surgery.

A number of cases of duodenal fistula are reported following pylorectomy. The trauma to the tissues predisposes to their digestion by the powerful pancreatic and duodenal secretions. The skin adjacent to the wound and even over the entire abdomen may become eroded, masserated and markedly inflamed. The fistulous tract widens until it becomes an enormous gaping wound. The patient becomes rapidly emaciated and death often ensues in from three to ten days. The prognosis is exceedingly grave. Spontaneous healing rarely occurs.

Colp reports 39 cases of duodenal fistula occurring after the following operations:

Cholecystoduodenostomy	1
Suture after perforation or rupture	7
Drainage of subphrenic abscess	2
Cholecystectomy	12
Nephrectomy	10
Billroth	6
Choledocotomy with tampon	1
Total	39

In this report drainage and tamponing were used in 26 cases, with a question mark after the remainder, showing to some extent the advisability of omitting any form of drain when possible.

The progress of a large duodenal fistula is rapidly fatal; the depletion and emaciation are marked. The blood changes, as studied by Walters, Kilgore and Bollman in man, as well as in sixty dogs, have greatly added to our knowledge of this condition. It was found that the chemical changes were similar to those in cases of high intestinal stasis. These consist in increasing alkalosis, decreasing concentration of the chlorides in the blood serum and progressive rise in the blood urea. In cases with high nitrogen content of the blood, there is a decrease of urea excreted by the kidney and an increase of urea in the duodenal discharge.

The amount of fluid lost varied from one to five liters in twenty-four hours. It was believed that the loss of bile and pancreatic secretion was the cause of alkalosis and toxemia. Walters, Kilgore and Bollman found this not to be true, by transplanting the bile and pancreatic ducts 25 cm. below the origin of the jejunum, so that neither bile nor the pancreatic secretion was lost through the fistula.

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* Read before the Meeting of North Pacific Surgical Association, Vancouver, B. C., Dec. 10, 1926.

The chemical changes in the blood were found to be the same as in duodenal fistula without transplantation of the ducts. The normal amount of HCl secreted by a dog is between 250 and 400 c.c. in twenty-four hours. In duodenal fistula at least part of this acid is lost. In experimental fistula there was an increase in the alkalinity of the blood and a decrease in the blood chlorides. This would indicate that the loss of gastric secretion through the fistula was in a measure responsible for the decrease in chlorides in the blood as well as the increase of its alkalinity. By intravenous injection of from 500 to 700 c.c. of 1 per cent solution of sodium chloride a dog could be kept alive for three or more weeks, when otherwise the animal would die in from three to five days.

Several methods of treating duodenal fistula have been tried. Very small ones have been reported to heal spontaneously. In large acute cases early operations are indicated, such as pyloric exclusion, gastroenterostomy or jejunostomy. Colp shows that in sixty cases the mortality in pyloric exclusion with gastroenterostomy was 84 per cent and in jejunostomy 50 per cent.

The nonoperative treatment as carried out by Erdman consists in diluting the duodenal discharge with large amounts of water or giving large amounts of water by mouth to diminish its digestive power by diluting and flushing. This treatment has not proven satisfactory. Cameron describes a method by which the duodenal secretion is removed from the fistulous tract by means of a catheter and suction. Cameron reports one and Lahey two cases healed by this method.

If this fails, operative treatment becomes very necessary. Jejunostomy gives the best results. A very important sustaining treatment is intravenous administration of normal salt solution.

Case 1. A case is presented of duodenal fistula which I have successfully treated by a method different from any I have been able to find in the literature. This patient developed a large external fistula after choledochoduodenostomy with rapid decline and emaciation, the fistulous opening becoming very large and the skin over the abdomen excoriated. Injection into the fistula of a 1 per cent solution of citric acid, two to three ounces, three to four times a day, healed the fistula completely in ten days.

Case 2. Mrs. K., age 39. Patient states that following meals she has gas belching and pains in the epigastrium often radiating to the right shoulder and back. These symptoms have been present for about nine years.

Physical examination shows marked tenderness in the right hypochondrium with considerable reflex rigidity. Murphy's sign + +. No jaundice, cyanosis, edema or dyspnea. Provisional diagnosis was chronic cholecystitis.

Nov. 30, 1925. Operation, cholecystectomy. Under nitrous oxide and ether anesthesia the gallbladder was removed in the usual manner. It was found to be thickened and to contain two stones and one stone in the cystic duct. No anomalies were noted, except a small amount of bile found in the wall of the gallbladder and a round opening about the size of a pea simulating the opening of a vein. The patient reacted well from operation.

Dec. 4. Patient markedly jaundiced. Bile in urine strongly positive. The stools were faintly positive for bile. Patient complained of considerable pain and gurgling in region of duodenum. The dressings were stained with bile. A Rehfuss tube was passed into the duodenum on two successive days and a Lyons-Meltzer drainage was performed with the following results:

First hour—Free HCl, 23; Combined, 16; total, 39. Blood, positive. Bile, faint trace.

Second hour—Free HCl, 8; Combined, 11; total, 19. Blood, positive. Bile, faint trace.

Third hour—Free HCl, 1; Combined, 5; total, 6. The emesis shows no bile at this time.

Dec. 7. Due to the fact that the patient was jaundiced, that the urine contained bile and that there was very little in the duodenal drainage and stools, it was decided to do an exploratory laparotomy. This was done with the following findings: "Common duct found to open into the duodenum. No continuity with the remains of the cystic and hepatic ducts nor with the common duct and liver. No true hepatic duct could be found."

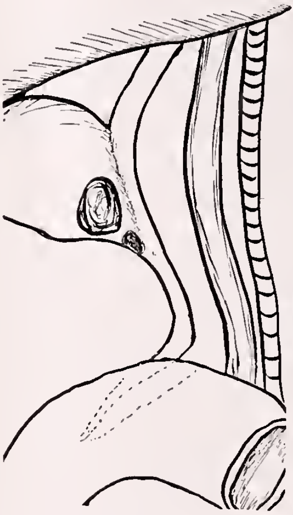
Fig. 1.

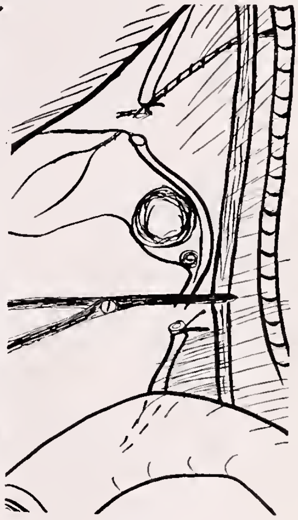
Fig. 2.

Fig. 1. Shows parallelism of cystic and common ducts as found in this case.

Fig. 2. Shows how hepatic and common ducts were severed.

Dec. 10. Wound draining profusely. Jaundice clearing slightly but the urine is still strongly positive for bile. Stools clay colored. This condition continued for a period of three weeks and it was decided again to explore the abdomen.

Dec. 28. Laparotomy was performed and the following notes were made: "Massive adhesions to the liver, stomach, duodenum and transverse colon. Biliary fistula followed to the under side of the liver. Common duct not found. Pancreas slightly enlarged and hard. Remains of the hepatic duct found to be about 1 cm. in length and coming from the under side of the liver. Choledochoduodenostomy (Mayo) was performed around a 6-inch length of No. 14 F. rubber catheter, extending from liver to duodenum and left in situ."

Dec. 30. Dressing changed and drain loosened, followed by a profuse flow of bile. Drainage continued.

January 2, 1926. Drain removed. Profuse bile drainage. Stools acholic. Urine positive for bile.

At this time the patient developed a duodenal fistula with digestion of abdominal wall. She looked badly. Pulse rapid and feeble.

The discharging sinus was irrigated twice daily with a 1 per cent solution of citric acid and the entire area treated with a 5 per cent ointment in lanolin. The patient was given nutrient enemata of equal parts of peptomized milk and coffee, three ounces each three times daily, and sips of water every half hour with almost constant salt solution drip.

Jan. 8. "Continues to drain duodenal contents freely. The wound looks less inflamed. Digestion apparently stopped under the citric acid treatment." At this date the patient weakened perceptibly, the pulse was weak and thready, there were cramps in the abdomen, vomiting and diarrhea, signs of starvation acidosis. Radiograms showed the catheter in the cecum.

Jan. 10. The patient was placed on nutrient enemata consisting of:

Milk and cream, equal parts, three ounces; meat jelly, one dram; yolk of one egg; whiskey, one fluid ounce; miscellaneous, Peptonize and incubate at 100° for one hour and give by rectal drip.

Alternating with: Milk and cream, equal parts, three ounces; beef juice, one ounce; yolk of one egg; pancreatin, 10 grains; whiskey, one ounce. Incubate at 100° for one hour and give by rectal drip.

These enemata were alternated every eight hours and a drip of glucose and soda was kept up as much as possible between times. Sips of water by mouth every half hour.

Jan. 20. "Radiogram shows the catheter in the sigmoid colon." The wound now closed rapidly and the duodenal drainage lessened in amount. The citric acid treatment was continued. The nutrient enemata were discontinued when the drainage ceased and the patient was put on soft foods. At this point she developed a toxic enteritis and stomatitis which were very difficult to control.

Feb. 1. "Patient up in chair. The enteritis and stomatitis have cleared up. Catheter was expelled some days ago. Patient takes full diet."

Feb. 15. Patient has gained in weight and feels quite strong except for occasional pain the epigastrium. The wound is entirely closed, the stools and urine are normal and the jaundice has disappeared.

March 2. Patient seen at home. Has gained considerable weight. Digestion seems normal and cramps in the abdomen have entirely ceased.

Patient examined December 9, 1926, about one year after last operation. There is a large ventral hernia in the operative wound and some tenderness over the liver area. The bowels are fairly regular, there is no indigestion, no jaundice. The patient weighs 115 pounds and is fairly comfortable.

Some Diagnostic Problems in Hip in Early Life. Eight cases of hip conditions occurring in early life are reported by J. Albert Key, St. Louis (Journal A. M. A., Jan. 8, 1927). He states that hip conditions that differ widely in etiology may present practically identical clinical and pathologic pictures. In many instances a correct diagnosis can be made only after months or years of observation under treatment, and occasionally it is not possible to make an exact diagnosis. By guinea-pig inoculation and the examination of material removed at operation, one can determine whether or not the hip is tuberculous; but if the hip is nontuberculous, the pathologic report is usually chronic inflammation, and this aids but little in the diagnosis. Certain hip conditions tend to begin to cause symptoms in definite age periods. A recognition of this fact is of considerable aid in diagnosis. Many of the chronic obscure hip conditions that occur in children can be relieved by conservative treatment.

ABDOMINAL PAIN OF CARDIOVASCULAR ORIGIN

REPORT OF CASES

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There are many well known surgical diseases of the abdomen, where early intervention is necessary to save life. There are some medical conditions which closely simulate these, where intervention at any time would have a fatal ending. It has long been recognized that abdominal pain of thoracic or spinal origin produced a picture in many ways similar to that of surgical diseases of the abdomen. Pneumonia, pericarditis and tabes dorsalis have been well known to us in this respect.

Recently we have become more familiar with one disorder, whose radiation of pain has provided a most perplexing problem. This condition is angina pectoris. It is difficult to define its exact pathology and it has long been looked upon as a syndrome, whose underlying disease was in the aorta, the coronary arteries, pericardium or heart valves. Its common expression as a severe, substernal pain, radiating to the left arm, to the neck or to the back was familiar to us, but it has recently been recognized, and many cases have been reported, where the radiation of pain was erratic, and its location in the epigastrium or right hypochondrium has made the diagnosis difficult.

Coronary disease with anginal symptoms is most likely to cause confusion, and although in a number of cases the pain radiation is regular, it is more likely to be referred to the abdomen than in aortic or valvular disease. The clinical picture of coronary disease is not yet well known to the profession, and particularly is this so where the symptoms are referred to the abdomen and where the natural diagnosis would be indigestion, food poisoning or gallbladder disease. It is unusual with these patients to find symptoms and signs of heart disease, though in the later stages these may declare themselves. In fact, patients with coronary disease do not present a well recognized group of symptoms. They are all characterized by vagueness, variability and lack of uniformity, being thus in contrast to such conditions as gastric ulcer, gallbladder and pancreatic disease. One feature that has been noted by various writers is the frequency of fullness and sense of pressure, associated with flatulence and the feeling of abdominal distension. This may be associated with belching, nausea and vomiting and is suggestive of gastrointestinal pathology. Patients sometimes complain of dyspnea on exertion, or of belching and precordial pains after a moderately heavy meal. They have distress at night and often show a peculiar pallor of the lips.

In acute coronary obstruction the suddenness and severity of the onset is typical and dramatic. Although it may occur in the course of chronic disease of the vessels, it comes as the initial attack in the majority of instances. The pain is severe and has been described as excruciating, bursting or tearing, often lasting for hours or even days. It may be associated with nausea and vomiting or with complete prostration and at times sudden death. There is usually a pallid cyanosis, an expression of great anxiety, rapid respirations and a weak, thready pulse. The patient may move about, as no position is found which will give relief. A drop in blood pressure always occurs and a pericardial friction rub is frequently noted within a few hours; the liver is enlarged and tender and jaundice sometimes quickly develops; leukocytosis is found within a few hours and may run as high as 20,000 with 82 or 83 polys. The temperature will invariably rise, sometimes as high as 101 or 102. With belching, nausea and vomiting, the similarity of the condition to perforation of a gastric or duodenal ulcer is easily seen.

The literature and hospital records inform us of the frequency with which abdominal operations have been performed in this disease. Both conditions occur most frequently after middle life, the curve of incidence in coronary disease being highest at the age of 60. Physical examination, where occlusion has taken place and the pain has been referred to the epigastrium, will show a distinct resistance of the upper abdominal muscles, sometimes almost amounting to rigidity. It is, however, never board-like, as in the typical case of perforated peptic ulcer. Crackling rales are found early at the basis of the lungs and persist for a long time.

CASE REPORTS

Case 1. H. B., age 57, male. Entered hospital in 1918, complaining of severe pain in the epigastrium following shortly upon a heavy meal. This was boring in character and extended somewhat into the right hypochondrium. He had vomited and belched gas at the beginning of the attack and was still nauseated. The pain had continued in unvarying severity for two hours when first examined. The upper abdominal muscles were somewhat rigid; there was tenderness to the right of the middle line; the white count showed 16,000 leukocytes, 81 polys, temperature 100°. A casual chest examination was negative. A diagnosis of perforated duodenal ulcer was made and immediate operation advised. As this was refused morphine was administered to relieve his pain. Next morning his condition was much improved and he was able to walk out of the hospital. He died suddenly of heart disease five months later.

Case 2. L. R., age 51, male. For over two years this man had complained of flatulence and abdominal distention usually following a hearty meal. It had, however, occurred irregularly and was always described as annoying. He had at times complained of epigastric distress with belching of gas, especially after meals. While out walking after dinner one evening he was seized with a sudden, severe pain of an agonizing character, first felt in the epigastrium but spreading to the lower abdomen. A condition of shock quickly developed and he died in a few minutes.

Case 3. H. F., age 53, female. Examined at her home where she was found walking the floor and complaining of excruciating pain in the epigastrium. The pain had come on two hours before and she had taken a few ounces of whisky in an effort to obtain relief. She was almost delirious and her answers were incoherent. Examination showed a slight resistance of the upper abdominal muscles, marked tenderness over the gallbladder region, weak had, however, occurred irregularily and was always white cell count 14,000, and blood pressure 100-60. A diagnosis of coronary embolism was made and morphine was administered. She died three hours later. Postmortem examination showed an embolus of the left coronary artery.

Case 4. D. C., age 67, male. Entered hospital comlaining of severe pain in the upper abdomen. It was described as aching in character and had come on suddenly eight hours previously, following a hearty breakfast. The pain had been continuous and had not been relieved by sedatives given by mouth. Examination showed the upper abdominal muscles to be tense, and there was distinct tenderness under the right costal border. Temperature was 101° and white count 15,000 with 82 polys. Pulse was 110 and regular, blood pressure 140-90. A diagnosis of perforated duodenal ulcer was made and operation was performed one hour later. Nothing was discovered in the abdomen to explain his symptoms, the viscera being found healthy on careful examination. He died the next day. Postmortem examination was not permitted.

Case 5. L. A. R., age 57, male. Examined at home for a pain in the epigastrium and right side of abdomen which had been present for two hours without relief. He described it as a continuous, boring pain of great severity and said that he had felt somewhat nauseated since its beginning. There was no rigidity of the abdominal muscles and no sign pointing to disease of the internal organs. His pulse was 100, blood pressure 180-110. Codein was administered by mouth in one grain doses but it was not effective until four grains had been taken. He was much better next day and was able to return to business. Three months later he was found dead in bed.

In only one of these cases was a postmortem examination obtained and in only two of them was coronary disease suspected in the first attack. The character of the pain, however, which was typical, and the subsequent course of events, makes it highly probable that all these cases suffered from coronary disease. The case of H. F. is noteworthy, inasmuch as it occurred in a female and was of sufficient severity to produce an early fatal termination. The disease rarely assumes the serious aspects in women that it does in men.

CARCINOMA OF THE APPENDIX

CASE REPORT

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Carcinoma of the appendix is a comparatively rare disease, a condition which, according to various writers, is never diagnosed before operation. Many opinions are advanced as to its frequency, pathology and clinical course. Especially divergent are the statements of its relative malignancy or benignancy. The following report presents a case of carcinoma in an acutely inflamed appendix, with fatal termination from probable metastasis.

Patient is a rather short statured, well preserved white man of 68 years who first consulted a physician for present illness Sept. 24, 1925, complaining of upper abdominal pain and distress of some six weeks' duration. General health, as a rule, has been very good. There is a history of malaria many years ago and an attack of diarrhea lasting several weeks some twenty-five years ago. Four years ago had influenza. For many years has had occasional attacks of indigestion with gaseous eructations but nothing to suggest gastric or duodenal ulcer.

Following one of his gastric upsets some six weeks ago, patient began to have attacks of upper abdominal pain and distress, pain at first at irregular intervals with periods of relative freedom between. It had no definite relation to meals, though eating seemed to aggravate it; usually worse at night. There was gradual increase in amount of discomfort so that it practically became continuous about a week before his examination. There was no nausea or vomiting; some temporary relief from discomfort was obtained by repeated enemata. Patient was moderately constipated and there was some mucus and bright blood in the stools, the latter being attributed to hemorrhoids.

On examination, patient did not appear acutely ill. Pulse was 80, blood pressure 128-80. There was a slight yellowish tinge to the sclera and a marked arcus senilis. Tonsils were chronically infected. Upper teeth had been removed and there were several crowns and fillings in lower teeth. Heart and lungs appeared to be normal. Abdomen presented no masses, tenderness or rigidity. Rectal examination revealed an enlarged, soft prostate. No masses were felt in the rectum.

A complete gastrointestinal radiographic examination was made, which revealed in outline a normal stomach, of normal mobility and motility. The duodenal cap showed no unusual configuration. A barium enema revealed no abnormalities.

Gastric analysis showed the absence of free hydrochloric acid, and a combined acidity of 10. No occult blood was found in the stools. Urine was essentially negative for abnormal findings. Blood examination showed hemoglobin 80 per cent, white count of 9,800 and red count of 4,500,000.

On a bland diet and with mineral oil for his constipation, patient's condition improved considerably for five weeks. He was, however, still aware of considerable abdominal distress and of some difficulty in passing both feces and flatus.

A week before admission to hospital, he began to have attacks of severe abdominal pain, followed by nausea and vomiting. At this time also had definite sense of some obstruction in the rectum. These more acute symptoms finally became so severe as to require hospital care and attention.

Digital examination of the rectum at this time revealed, just above the prostate, a movable, slightly tender mass about the size of a walnut. The bowel itself was not greatly constricted, inasmuch as the finger and sigmoidoscope could pass beyond the mass readily. The mucous membrane, freely movable over the tumor, was of a dusky color and exhibited no ulceration or visible bleeding.

There was an increase in leucocyte count from 5,600 on day of admission to 17,400 on day of operation, three days afterward, the latter count showing a polymorphonuclear leucocytosis of 83 per cent.

A diagnosis of carcinoma of the lower part of the rectum was made and an excision operation after the method of Coffey was contemplated. On opening the abdomen, considerable blood-stained serous fluid was found free in the abdominal cavity. The epiploicae were enlarged and inflamed, the sigmoid was thick and edematous, and many enlarged mesenteric glands were seen; one of the latter was removed and on immediate frozen section was found to be inflammatory in character. An acute ruptured appendix with its enveloping omentum was found adjacent to and attached to the medial side of the rectum and formed the tender mass felt on previous rectal examination and which led to a diagnosis of carcinoma. The appendix with its inflammatory investment was removed and the abscess cavity drained.

Postoperative course in the hospital was rather uneventful. There was very little postoperative shock and for a few days there was a copious discharge of foul colon pus. This latter gradually decreased in amount and patient was discharged to home in three weeks, the wound discharging a small amount of purulent material.

After leaving the hospital he lost weight rapidly, became much emaciated and cachetic. Large amounts of morphia were required for the general abdominal pain. Finally he succumbed January, 1926, about five weeks after leaving the hospital, about eight weeks after the operation, and approximately five months after the onset of the abdominal symptoms. Autopsy on body was not permitted by family.

Pathologic report. Specimen shows an appendix 9 cm. long and 14 cm. in diameter, covered with an exudate. Cross section shows the walls to be from 4 to 5 mm. in thickness. The mucosa shows many marked hemorrhagic areas. Diagnosis: Acute suppurative appendicitis.

Further gross examination of the appendix shows a hard indurated mass of tissue about 1.5 cm. in diameter, completely filling the lumen at the cecal end of the appendix. The induration extends through the muscle layers out to the periphery and is very suggestive of carcinoma. It is probably the primary focus of the carcinoma found in the omental tissue.

Section on microscopic examination shows an appendix with very little of the muscle tissue left. There is a large amount of exudate over the surface of the appendix, showing many pus cells and round cells. Some places show an organization of the exudate; other places show only necrotic material. Many areas in the appendix show epithelial cells grouped in some places into masses; in other places there is an attempt at gland formation. In some areas the glands are closely placed and resemble those of a normal appendix. One area shows normal mucosa with an area of carcinoma-like tissue in close proximity.

Section from the glands and omentum shows large amounts of fibrous tissue and everywhere infiltration with cancer cells of the glandular type. In some places there is a definite gland formation. The cancer cells are markedly irregular in outline.

From the above clinical history and pathologic report, it seems reasonable to assume, even in the absence of an autopsy, that this was a case of carcinoma which was primary in the appendix, and led to a fatal termination from metastasis and general carcinomatosis.

From the pathologic report this tumor seems to have many points of similarity with those described by Shaw[1] of London. He says that it usually occurs at the distal end of the appendix. Microscopically the tumor is found to consist of colonies of rounded cells, lying in well-marked alveoli, and often seen invading the muscular wall. In some specimens the cells actually reach the peritoneum. In addition to the round cells there are also present columnar cells arranged in a ring-like manner.

Shaw believes the cells of this appendiceal tumor are of epithelial origin, and come from deep-seated epithelial cells which have been cut off in the earlier stages of fetal life. He explains the presence of small round cells as due to infection during the progress of the growth, or to a coincident attack of appendicitis.

Unfortunately he has been able to learn but little concerning the malignancy of these tumors, but quotes various textbooks on the subject. He gathers the impression that almost all of the cases pursue an innocent course, but that some are malignant. One case in his series tends to show that there was a fatal termination due to metastasis. The data, however, are not complete.

Moran[2] reports a case in which the appendix was removed, and the mesoappendix widely resected; subsequently x-ray treatments were given. At the time of his writing, years after treatment, the patient was in good health. He presents some references to the literature, and states the condition is usually discovered incidentally. He states also that the condition is more frequently found in women than in men, and to be definitely an affection of youth. In France an association with tuberculosis is suggested. There is frequently present an inflammatory condition, the symptoms of which mask the primary neoplastic lesion. Certain reported cancers of the cecum are primarily carcinomata of the appendix.

One of the most comprehensive papers on this subject is that of Van Alstine.[3] He writes on primary carcinoma of the appendix, gives a report of two cases and an excellent review of the literature. He concludes that:

1. Primary carcinoma of the appendix occurs in about 0.5 per cent of removed appendices.

2. These present two main types, the spheroidal or round celled or "basal celled" type, and the "columnar" or "adeno" type, of which the first is more common and the latter more prone to malignant characteristics.

3. The condition has never been positively diagnosed preoperatively and rarely at operation.

4. While by far the greater number have appeared benign, they show histologically malignant characteristics, as atypical arrangement of epithelium, atypical location of epithelium, and in a few cases metastasis. For this reason we should remove the appendix regardless of appearance or symptoms, whenever opening the abdomen and when feasible; and in all cases of appendectomy, multiple or serial sections for detailed study should be made.

5. All patients showing carcinoma of the appendix, however seemingly benign, should be kept under close observation.

On the other hand, Friend[4] presents a case of lymphosarcoma of the appendix, associated with a nonrotated cecum, and also gives a review of the literature on sarcoma of the appendix. He finds only nineteen authentic cases in the literature. He concludes that all appendices removed at operation should be carefully examined for malignancy, and when operating for a diseased condition of the appendix where malignancy is suspected, the adjoining head of the cecum and the draining lymphatic glands should be carefully examined, their condition determined and proper operative treatment instituted.

BIBLIOGRAPHY

1. Shaw, Ernest H.: Brit. Jour. Surg., Vol. XIII, No. 49, July, 1925.

2. Moran, H. M.: Med. Jour. of Australia, Vol. 2, No. 7, Aug. 15, 1925.

3. Van Alstine, Guy S.: Ill. Med. Jour., Vol. XLIX, No. 6, June, 1926.

4. Friend, Emanuel: Ill. Med. Jour., Vol. L, No. 1, July, 1926.

Treatment of Contractures at Knees. John Prentiss Lord, Omaha (Journal A. M. A., Jan. 1, 1927), depicts and describes a brace he has devised for the treatment of the contractures at the knee resulting from infantile paralysis and arthritis. This appliance has been found to be sufficiently stable to eliminate the necessity for the use of plaster, which is desirable for reasons previously given. It has the ability to force the tibia forward in an effective manner, as well as to straighten the leg. It is not so cumbersome but that it may be conveniently worn during most of the treatment; it is removable, and does not interfere with walking.

CHRONIC COLITIS*

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This study is based on a series of 230 cases, having a history of chronic illness with progressive gastrointestinal symptoms. In all of them it was possible to demonstrate a palpably tender colon. Proctosigmoidoscopic examination showed definite inflammatory changes in the mucosa of the rectum and sigmoid; the discharge removed through the sigmoidoscope was shown to be inflammatory in character; and in certain of them x-ray examination revealed deformity of the colon.

A survey of the literature gives the impression that the term "chronic colitis" suggests no definite clinical picture, but rather refers to many disturbances, nervous or inflammatory in origin, affecting the colon. The common conception of this condition is based upon descriptions of the following conditions: (1) Mucous colitis, (2) irritable colon, (3) ulcerative colitis.

In order to clarify the subject, I will briefly refer to these conditions.

1. *Mucous colitis* was described first in this country by Good in 1825. In 1904, Nothnagel offered much evidence to prove his opinion that mucous colitis was largely of nervous origin and that there were no marked inflammatory changes in the colon. His conclusions have been largely accepted, and as an indication that this opinion still holds, I refer to Lord Dawson who, in the annual oration before the Medical Society of London, May, 1921, on mucous colitis, states that he is not referring to any condition associated with organic disease of the colon. In my experience sigmoidoscopic examination of even long-standing cases of mucous colitis shows little or no evidence of chronic inflammatory changes.

2. *Irritable colon.* I would not go so far as to say that all of these cases have a basis of infection and chronic inflammation, but I believe careful proctosigmoidoscopic study, with careful examination of the mucus or mucopus obtained from the colon, will show that many of them are relatively early stages of chronic colitis.

3. *Ulcerative colitis* should refer to a definite group, in which practically from the beginning there is a tendency to multiple ulceration with dysentery and serious general symptoms. These will not be discussed in this paper. In another group, chronic ulceration is a rather late development of chronic colitis, and to these I will refer later.

In 1904, Swartz reported that in certain cases of chronic ulcerative colitis he found on x-ray examination that the colon had to a considerable extent lost its haustrations, had become a smooth, thick-walled tube, and in more advanced cases showed marked contraction and deformity. Since then in this country Logan, MacMahon, Carman and Yeomans have made similar reports.

Observations of a considerable number of cases showing these characteristic changes indicate that in many of them ulceration is not present, or if so, does not dominate the picture. Therefore, I consider these changes as characteristic of advanced stages of chronic colitis, in which there have developed proliferative interstitial changes, and believe the ulceration when present to be incidental. That they occur in true ulcerative colitis is unquestioned.

In the absence of laboratory evidence, I am satisfied from clinical observation that the infection is probably focal in origin, and most likely due to a streptococcus which causes chronic progressive changes in the wall of the bowel. In support of this belief, I point to the following observations: (1) Frequent history of onset following tonsillitis or respiratory infections. (2) Repeated observation of exacerbations following a cold or sore throat. (3) Similarity of pathology and course, with that of chronic cholecystitis.

In this series of 230 cases, about 50 per cent had large and infected tonsils or pyorrhea. A coexistence of chronic colitis and chronic cholecystitis occurred in 59 cases.

Age incidence was as follows: 10 to 20, 6; 20 to 30, 47; 30 to 40, 93; 40 to 50, 47; 50 to 60, 28; 60 to 70, 7; 70 to 82, 2.

A history of illness having existed for five to twenty years places the onset in most cases in the early years of adult life. Cases have been described in infants and more reports on the incidence in young people would be interesting.

Sex as follows: Males 82, females 148.

Constipation has been considered a common cause of colitis. Most patients with colitis give a history of chronic constipation, but it is difficult to determine whether it is cause or effect. Methods used to overcome constipation, such as giving cathartics and coarse foods, cause enough irritation to predispose to infection, or to increase an existing colitis and insure its chronicity. Amebic colitis, bacillary dysentery and acute enterocolitis may be followed by chronic colitis. Many patients date the onset of their trouble from an attack of grippe or "intestinal flu."

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* Read before Vancouver Medical Association, Vancouver, B. C., February, 1925.

PATHOLOGY

The pathologic process was studied in these cases by careful and in most cases repeated sigmoidoscopic examinations, examination of the discharge obtained through the sigmoidoscope, fluoroscopic observation and in a certain number operative inspection.

In general, it may be said that chronic colitis is a slow proliferative inflammation, affecting all the walls of the colon. It begins in the rectum and sigmoid, and slowly extends upward until the entire colon, and at times a portion of the terminal ileum are involved. Early there is much injection with infiltration of round cells in the mucosa and submucosa, later proliferation of fibrous tissue in the submucosa, atrophy of the mucosa and gradual thickening, contraction and deformity of the bowel. Ulceration, stricture or perforation may occur. The pathologic picture of the various stages, as I have seen it with the use of the sigmoidoscope, will be discussed later. In cases subjected to laparotomy few gross changes were observed. The bowel wall was thickened to various degrees, mottled in appearance, but the peritoneum was smooth and adhesions and bands were not observed.

SYMPTOMS

An acute onset with an attack of dysentery is not the rule but does occur. I have seen a number of men who had such an onset while in France, and although the dysentery cleared up, they did not regain their health and have since run a course of chronic gastrointestinal invalidism. I have also noted the frequent onset after an attack of tonsillitis or grippe.

Usually the onset is gradual. In the early stages there may be no symptoms to call attention to the colon. Many report feeling dull and tired. They are unable to maintain mental effort and are fatigued by moderate physical exertion. A dull headache develops during the day. There is lack of appetite, gradual loss of weight, and not infrequently a low afternoon fever. Constipation is the rule in this stage, but there may be periods when the stool is rather soft, or a hard, constipated stool may be followed by a soft stool, or a spurt of liquid or gas.

A well developed case, in addition to marked impairment of the general health, as loss of weight, anemia, weakness and nervousness, usually has marked abdominal discomfort. Pain is not so acute as in mucous colitis, but is more likely to be dull aching, often referred to the back. It is brought on or increased with acute exacerbations which occur periodically. There is poor appetite, furred tongue, eructation of gas, bad taste in the mouth. Rumbling and gurgling of gas in the bowels is the rule, and usually much gas is expelled. Patients may maintain their daily activity for many years, with a gradual increase in the severity of the symptoms. Others have become chronic invalids, thinking constantly of their troubles and continually seeking new sources of relief.

The general symptoms, such as apathy, weakness, loss of weight, anemia, dull headache are due, I believe, to the low grade infection, which may with exacerbation and remission last over a period of many years. Many of these patients have been told that their ill health was due to autointoxication, secondary to intestinal stasis or enteroptosis. Much work has been done tending to prove that "autointoxication" is more theory than fact. I believe that, so long as the mucous membrane is normal, the amount of absorption of toxins from the intestinal contents is negligible.

Mummery, after a long experience, states: "I feel sure that too much attention is being paid to intestinal stasis as the cause of autointoxication. Most extreme cases of colon stasis have no toxic symptoms. To my mind it is clear that it is not the stasis which is the cause of the trouble, but the fact that some change has occurred in the walls of the bowel which allows toxins generated in the intestine to be absorbed direct into the blood stream."

Alvarez (*Physiological Review,* July, 1924) exhaustively reviews the work done on autointoxication and concludes as follows: "It seems that under normal conditions the intestinal mucosa prevents the absorption of toxins and usually forms an efficient barrier to the passage of bacteria. Under unusual conditions this defensive mechanism breaks down."

When the intestinal wall becomes the seat of chronic infection, not only is there absorption from the inflammatory process, but probably from the abnormal intestinal contents. It has been noticeable in studying these cases, that during an interval in which there was a tendency to constipation, the patient felt better, and with a return of abdominal soreness and looseness of the bowels, there was a marked increase in toxic symptoms. This indicates that not stasis but increased inflammation was the principal factor in increasing toxic absorption.

Pain and tenderness. In the early stages there may be little pain. Gradually there develops a sense of abdominal discomfort or peristaltic unrest, with occasional minor cramp-like pains here and there. Even in well advanced cases acute colic, so common in mucous colitis, is not present. A dull aching across the upper abdomen, radiating around both sides to the back is often one of the most constant complaints.

Pain is most common in the morning. It is often increased by taking food, occurs at irregular times after eating, and a common complaint is of sickening ache or a sensation of emptiness or nausea, following a bowel movement or after an enema. Taking an enema is often painful and difficult on account of spasm.

Hershall refers to the pain after eating or bowel movement as follows: "As these natural movements are increased after the ingestion of food, and before and after a passage of the bowel, an explanation of why a patient suffers at these times is at hand. The formation in the intestines of the irritating products of fermentation and putrefaction increased the peristalsis of the unnaturally irritable intestine with a concomitant exacerbation in the patient's sensations. In fact, a very characteristic symptom is the occurrence of pain referred to the umbilicus immediately after eating. On account of this time relation to eating, this pain is often considered to be of gastric origin. In reality, it is due to peristalsis in the tender colon, excited by the entrance of food into the stomach. A dull headache, often with general aching, and tenderness more or less general over the abdomen are not unusual.

Gastrointestinal symptoms. Early there may be little or nothing to call attention to the gastrointestinal system. The symptoms are rather those of a low grade infection or toxemia, and are often considered to be due to neurasthenia, "autointoxication" or anemia. These may be poor appetite, furred tongue, bad taste in the mouth or nausea. These so-called symptoms of biliousness have been ascribed by Alvarez to irregular or reversed peristalsis, and certainly in these cases the abnormal irritability, gas distension, etc., are sufficient to profoundly change the normal gradient action. Vomiting, eructation of gas, sour stomach and pylorospasm are not commonly due to colitis, and when present I begin to think of a concomitant involvement of the gallbladder, stomach or duodenum.

A common complaint is "gas in the bowels," referring to the sense of gurgling and rumbling due to irregular peristalsis. Large quantities of gas are passed. Nausea is a prominent symptom, often in the form of a dull, sickening sensation, referred to the umbilicus or epigastrium and most noticeable after a bowel movement or enema. It may be accompanied by palpitation, dyspnea and a sense of great weakness and depression.

Bowels. Early there is constipation which may last for years. It is due to spasticity. The stools are usually hard, round balls, dark in color, and may have a thin coat of mucus. Measures taken to overcome the constipation, such as physics, bran or very coarse food, increase the irritation and inflammation in the mucous membrane and aggravate the condition. A little later the constipated movement is followed by a soft, mushy stool, even a spurt of liquid, or a mixture of liquid and gas. With a more active inflammation the stools are large, rather soft, having a mushy or frothy consistency and appearance, due to the admixture of mucus. At the time a patient, when asked about the bowels, often says they are all right, but on close questioning he admits he has three or four or more soft movements daily. In fact, he often takes pride in the fact that he has several such.

In later stages, when the bowel wall becomes more rigid and less spastic, a certain degree of dysentery develops. Free passage of mucus, and at times mucus and blood, is not uncommon in advanced cases. It is remarkable how many patients will state they have not noticed mucus. On passing the sigmoidoscope after an enema, however, several ounces of clear or cloudy mucus flow through the tube, or are seen in the rectum. Severe degrees of dysentery are uncommon, unless considerable ulceration is present.

Pruritis. Many patients complain of pruritis coming on with an exacerbation of abdominal symptoms. It starts with a sense of moisture about the anus, followed by irritation and thickening of the skin, with much burning and itching. Examination of these cases shows marked injection of the mucosa of the rectum and the pruritis is evidently due to extension of the inflammation or to the irritating discharge from the rectum.

Nervous symptoms. As in any long-continued illness, nervous and mental symptoms are common, but I have felt these symptoms were not the neurotic manifestations so common in mucous colitis, but rather those associated with weakness and chronic toxemia. Headache is often present, usually dull and more or less constant. There may be backache, pain in the limbs, numbness, burning and tingling, impaired memory and inability to concentrate in more severe cases. A number of patients have described a sense of great weakness and depression with dyspnea and palpitation of the heart, coming on more or less regularly in the morning.

Cardiovascular system. Cardiovascular asthenia is often present, manifested by rapid, weak pulse, cold extremities, exhaustion and low blood pressure. Definite paroxysms of palpitation, extreme weakness with nausea and dyspnea may come on daily. I have observed a number of cases of hypertension, for which no cause had been found. In some instances they were taking magnesium sulphate or other laxative daily for the hypertension. Examination showed a colitis which undoubtedly was being kept active by the cathartics.

Urinary symptoms. Considerable work has been done, showing there is a definite connection between infection of the intestinal tract with that of the urinary tract. Certain cases in this series, having recurrent infection of the urinary tract, were sent to me by urologists. Treatment of an existing colitis in not a few of these resulted in clearing up the urinary disturbance.

DIAGNOSIS AND PHYSICAL EXAMINATION

A carefully elicited history is of greatest importance in making a diagnosis. An early history of obstinate constipation with some impairment of general health is suggestive. A history of several soft stools daily, passing of mucus, soreness or indefinite discomfort in the abdomen calls for investigation of the colon. In a case with long-continued gastrointestinal distress, weakness, anemia, nervousness, and especially if there have been numerous surgical operations without relief, think of colitis and not of prolapse of the stomach or adhesions.

Palpation of the abdomen is of greatest value. With the patient in a comfortable position, so that the muscles are relaxed, it is often possible to palpate the greater part of the colon. In general or localized tenderness of the abdomen, careful palpation may determine that the soreness is really limited to the colon.

I usually start in the left lower quadrant, where the colon is rather easily felt as a contracted, rope-like, tender structure. It can be followed up the left side to the splenic flexure. Palpating gently downward in the epigastrium, it is possible to obtain the tenderness and resistance of the transverse colon and to trace its course. The cecum is usually easily felt and the ascending colon followed. The barium enema facilitates this examination greatly, but is often not essential. If the gallbladder is suspected, the colon is visualized for differentiation.

Proctoscopic examination. Proctosigmoidoscopy is our most valuable diagnostic method, and by its use we are able in practically all cases to determine the presence or absence of a colitis and to judge of the type or degree of the inflammatory process.

1. Early stages. In an early case the mucosa is deep red, apparently thickened, and thrown into folds. It is rarely uniform, certain areas being deeply injected and others paler. Scattered over the surface are numerous rounded elevations that are gray, and appear edematous or translucent. These swollen follicles may be topped by a small erosion or superficial ulcer.

2. Later or hypertrophic stage. Later a characteristic appearance is a pale, grayish or ivory colored, thickened mucous membrane, apparently much swollen and edematous. It is irregularly lobulated by the reticulated blood vessels, many of which are dilated. The entire surface resembles that of the pancreas, and is usually covered over with a free secretion of mucus or mucopus.

3. Granular stage. In this stage the surface has the appearance of small, deep red granulations. The mucosa is thickened and infiltration of the submucosa causes a roughness of the surface. The granulations are rather firm and bleed very easily when touched. Mucus, often tinged with blood or brown in color, is more or less abundant. Often in this stage linear cracks or small ulcers can be seen.

4. Atrophic form. The appearance in this stage is very characteristic. The mucous membrane is very thin and translucent. The secreting elements have to a large extent been destroyed and the surface is dry and glazed, often finely granular. The marked increase in fibrous tissue in the submucosa gives the surface a whitish or ivory parchment-like appearance. It is traversed by a network of blood vessels which stand out prominently.

There is no distinct dividing line between the above mentioned stages and the various pictures described may be seen in one bowel. Islands of red, granular type, may be seen here and there, in a pale, swollen, edematous surface, or there may be areas of granulation and atrophy scattered here and there.

Ulceration. Small superficial erosions or ulcers may be seen early. In follicular ulceration small red ulcers may top a few or very many of the swollen solitary follicles. Linear cracks may occur in the granular or atrophic membrane or large, shallow, gray, indolent ulcers may be seen in older cases. In chronic ulcerative types, irregularly shaped and deeper ulcers are scattered over the surface, usually surrounded by or adjacent to white scarred areas. The surface is often covered with thick, bloody mucus or mucopus.

Hemorrhoids and fistulae should be looked for. Examination of the stools or of the mucus or mucopus obtained through the sigmoidoscope should always be made. Repeated smears should be made if necessary. Search should be made for focal infection, as tonsils, appendices, abscesses, pyorrhea or infected sinuses. In all cases investgation should be made for possible coexisting diseases of the gallbladder, stomach, duodenum and appendix.

Blood examination usually shows some degree of secondary anemia. In three cases I have seen a very severe type of anemia with some characteristics of a primary anemia. Leucocytosis is not marked as a rule. Gastric acidity was found in most cases to be within normal limits.

RADIOGRAPHY

The x-ray examination is not the most valuable diagnostic method in this condition because the characteristic picture is shown only when the chronic inflammation has resulted in thickening, contraction and deformity of the colon. In this series this picture was seen in less than 10 per cent of the cases.

Early the colon is spastic and barium may be retained in the form of separate rounded masses. There may be seen sections where there is a particular tendency to spastic contraction. This picture has led to suspicion of organic contraction with partial obstruction. In one case, over a period of years, many x-ray examinations had been made, showing much narrowing of the descending colon with marked dilatation of the proximal colon, and a partial colectomy had been recommended. However, during one examination, after giving atropin, I saw this open up to practically normal size.

A most valuable method of examination is careful palpation of the abdomen, with the aid of the fluoroscope and a barium enema. In what seems to be general abdominal tenderness it can frequently be demonstrated that the soreness is limited to the colon. Especially is this procedure useful in differentiating the tenderness of the transverse colon or hepatic flexure from that of the gallbladder. In the spastic stage the barium meal is usually slow to pass through the colon, and there is some degree of stasis in the cecum and terminal ilium. Where much ulceration is present, the meal is usually hurried through. In most cases of long standing there is a characteristic narrowing of the distal colon, with marked dilatation of the cecum and ascending colon.

In more advanced cases, where considerable interstitial changes have taken place in the walls of the bowel, more characteristic x-ray pictures are seen. The peristaltic waves become slow, shallow and prolonged. Later there is marked or complete loss of haustration. The picture presented is that of a smooth, barrelled tube, so-called "garden hose" appearance. This change is always most marked in the sigmoid and descending colon, but gradually progresses until the etnire colon is involved. More advanced cases show permanent contractions and deformities. However, a patient may have a marked colitis over a period of years before such a characteristic picture is seen. Incompetence of the ileocecal valve is so common as to be the rule in these cases. Points of persistent or repeated spasm may indicate the position of an ulcer. Occasionally an ulcer crater may be shown.

DIFFERENTIAL DIAGNOSIS

In this series fifty had been operated on during the course of their illness for chronic appendicitis. In all, one hundred sixty-one operations had been performed, most of them with the hope of relieving abdominal symptoms and usually without the desired results. Some of the conditions that should be differentiated are as follows:

Cholecystitis. A rather surprising number of these cases of chronic colitis gave evidence of a coexisting cholecystitis. Tenderness in the gallbladder region was determined with the aid of the fluoroscope and a barium-filled colon. Attention should be called to the similarity in clinical course and in the pathologic process in the two conditions. Which is primary is hard to say, and it is possible that they develop more or less coincidentally from a common primary focus.

I have recently operated on a young man who has been seriously ill for some years with a severe chronic colitis. His gallbladder was moderately thickened, but the striking thing was the very marked pericholecystic hepatitis or cirrhosis, suggesting prolonged delivery to this area of products of infection from the intestinal tract.

Appendicitis. In this series fifty gave a history of having had appendectomies. In the majority of these the operation was done for chronic abdominal symptoms which were not relieved. In the remaining 180 cases, only ten gave evidence, such as a history of acute attacks and evidence of a fixed or deformed appendix which was especially tender, leading to a diagnosis of chronic appendicitis.

Exophthalmic goiter. Some of these cases offer a definite oppportunity for confusion with colitis. In both there is nervousness, sleeplessness, often tachycardia, dyspnea and signs of toxemia. In some colitis cases running a low fever, the basal metabolic rate is also above normal. Five of these cases had had thyroidectomies. Two were considerably improved and probably had both conditions. Chronicity of the gastrointestinal symptoms is in favor of colitis, as diarrhea and vomiting in hyperthyroidism usually occurs only at the height of a toxic crisis.

Pelvic inflammation. Many women in poor health, with backache and evidences of chronic infection, have been advised to have a pelvic operation, because bimanual examination showed considerable tenderness, when really the tenderness and infection were in the pelvic colon.

Gastric and duodenal ulcer. Colitis may simulate these cases in that there is distress after eating. Careful x-ray and sigmoidoscopic examination will usually allow a differentiation to be made.

Gastric neurosis. I am convinced that fewer diagnoses of gastric neurosis would be made, if the sigmoidoscope was used more frequently.

Tuberculosis. Long standing cases with symptoms of a low grade infection run a course very similar to that of tuberculosis, and several of these cases had spent a certain amount of time in tuberculosis sanitaria. Only careful observation and repeated examinations will lead to a correct diagnosis. Tuberculosis of the colon is usually secondary to pulmonary tuberculosis, starts in the cecum and slowly extends to other parts of the colon, whereas chronic colitis starts in the pelvic colon and extends upward, involving the cecal region last.

Amebic dysentery is recognized by the proctoscopic appearance and finding the organism.

Enteroptosis and intestinal stage. In a considerable number of these cases enteroptosis was also present, often, I believe, secondary to the loss of weight and muscle tone. I am convinced that the train of toxic symptoms ascribed to intestinal stasis is often due to a definite colitis. So long as the mucous membrane is normal, I believe there is little absorption of toxins through it.

Carcinoma of the colon. Carcinoma produces secondary inflammatory changes in the bowel. This may be misleading. Recently I was consulted by a man of 74 who, following a family epidemic of bowel trouble, passed a little blood from time to time. Examination showed a fissure and inflammation of the rectal wall, with superficial ulceration and bleeding. On passing the sigmoidoscope into the sigmoid, we found a small carcinoma. Mummery mentions seven cases of carcinoma that had been treated for colitis.

TREATMENT

Observation of invalidism, due to chronic infection in the colon and disappointment in the results of treating well advanced cases, causes us to search for methods of prevention. Dietary deficiency as a cause has not been entirely accepted, but unquestionably it is important to see that our children have a balanced diet. It is also important that they develop healthful and hygienic habits, particularly with the object of avoiding constipation.

My experience leads me to the belief that practically all so-called simple chronic constipation is of the spastic type, even when occurring in asthenic and enteroptotic individuals, and the great majority of these have as a basis some degree of general inflammation in the colon. If this is true, it is evident that many cases of constipation are not rationally treated and I believe the results obtained by minimizing irritation are added proof of this contention.

Early removal of possible foci of infection, such as infected tonsils, pyorrhea, infected teeth, sinuses, etc. is necessary. More attention should be given to the study of causes of constipation, so that rational treatment may be instituted. Detection and elimination of intestinal parasites should be kept in mind.

In general, the active treatment of a case of colitis may require the institution of some of the above measures, especially the removal of foci of infection. In relatively early cases the interdiction of cathartics and elimination from the diet of bran and other roughage may be all that is necessary to bring relief or even a cure. In serious cases or during acute exacerbations rest may be essential, but realizing the impossibility of getting complete colonic rest and the tendency of these patients to introspection and invalidism, I have been slow to recommend a rest cure in the average chronic case, but rather recommend that as near as possible they keep up their normal activities and interests.

Regulation of the diet is of the utmost importance. In most cases this simply means the elimination of coarse, cellulose-containing foods and the substitution of a bland diet. Changing the type of the intestinal flora is quite possible by diet, but in general has not been of great value. In certain ulcerative cases a largely proteid diet has been very useful. Elimination of active cathartics is absolutely necessary. Olive oil, petroleum oil, agar agar are good substitutes.

Enemas are of great value in treatment. I have followed the suggestion of Logan and have used plain hot water systematically, with excellent results. The natural tendency to add antiseptic substances gets one into trouble, as the colon in these cases is extremely sensitive, and irritation and aggravation of the inflammation follows. Natural acriflavine solution has been recommended recently as being nonirritative. Oil enemas, using washed olive oil, cotton seed, or petroleum oil are invaluable, especially in the constipated cases.

Drugs give little aid. When dysentery exists, opium, bismuth or certain stringents may help. Benzyl benzoate, atropin or other antispasmodics will help in certain cases. Bile salts have been advocated to stimulate the bile flow. Drinking quantities of warm water, when the stomach is empty, stimulates as free a flow of bile as does the introduction of magnesium sulphate solution through the duodenal tube, and supplies more bile salts than you can put in many capsules.

SURGICAL TREATMENT

In discussing surgical treatment we may first consider removal of possible foci of infection. In these cases of infection about the nose and throat we may with some confidence recommend the proper surgical treatment for their removal, but with evidence of coexisting infection in the gallbladder or appendix we have a more serious problem. A considerable number of cases here analyzed had had appendices removed and usually without improving their condition. However, there is undoubtedly a small proportion, in which removal of the appendix results in improvement of the colitis. Again, indiscriminate removal of the gallbladder, even when we are reasonably satisfied that a cholecystitis is present will often result in disappointment. Only after a very careful study of each case and failure to get results otherwise, will we advise surgical removal of possible intraabdominal foci.

In those unfortunate patients, who have become chronic invalids with contracted, deformed or ulcerated colons, there is a distinct indication for surgical treatment. Appendecostomy or cecostomy is the simpler procedure used and in many cases gives great relief. In a smaller number of cases a cure is obtained. I have repeatedly observed, following a cecostomy, an irritability and spasticity, so great that the irrigating fluid was two or three hours in passing through. A week or ten days later several gallons of water could be used several times daily with no discomfort.

Ileostomy is indicated in serious cases. It certainly results in great relief and marked gain in general health. It has disagreeable features and there is no certain way of determining when it may be safely closed. Mummery quotes Sir George Makins, who has performed the operation in six cases, and has given as his opinion that if the opening cannot be closed in eight or nine months, it will subsequently become impossible to close it on account of the contraction which occurs in the disused colon, and the patient must be prepared for the probability that the opening will be a permanent one.

Colectomy has been performed where other methods have failed, but as these cases stand operation poorly, the mortality is necessarily high, and information as to the ultimate results is meagre.

CONCLUSIONS

Chronic colitis is a relatively common condition, in which it is possible to demonstrate progressive inflammatory changes in the walls of the colon and inflammatory secretion from the mucous membrane. The bacterial causes have not been determined, but there is evidence suggesting that, as in chronic inflammatory conditions of the stomach, duodenum, gallbladder and appendix, hematogenous infection with a streptococcus is likely.

This low grade infection, which alters the motor function of the colon and impairs the protective barrier of the mucous membrane, causes many inflammatory symptoms, probably accounts for many cases of chronic constipation and for many symptoms attributed to autointoxication and intestinal stasis.

Patients, having long standing constipation, unexplained abdominal pain and soreness or obscure gastrointestinal symptoms, are entitled to a proctosigmoidoscopic examination before treatment is recommended.

Falling Drop Method for Determining Specific Gravity. Henry G. Barbour and William F. Hamilton, Louisville, Ky. (Journal A. M. A., Jan. 8, 1927), have developed their specific gravity method to the point at which its simplicity makes as great an appearance as its rapidity and accuracy. Since the technic is easily acquired and the special apparatus demanded is very simple, it is believed that physicians in general will find it a valuable method for determining the water content of the various body fluids. A drop of water (or other body fluid) of definite size is released below the surface of a mixture with which it is nonmiscible. Its rate depends on its density, which can be easily calculated as soon as the rate of fall of a similar drop of standard solution of known density (released under identical conditions) is available for comparison. The method is said to be accurate to 0.0001 specific gravity, being, therefore, much more sensitive than hemoglobin estimations, red cell counts, refractometry or even total solids determinations. The specific gravity of one 10 c.mm. drop of body fluid may be found within less than a minute.

CONGENITAL VALVES OF THE POSTERIOR URETHRA

REPORT OF TWO CASES

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The occurrence of two cases of congenital valvular obstruction of the posterior urethra in the writer's practice within the last year warrants a report to call attention to a condition probably more common than the recorded cases indicate. In this connection the figures in the following table are interesting.

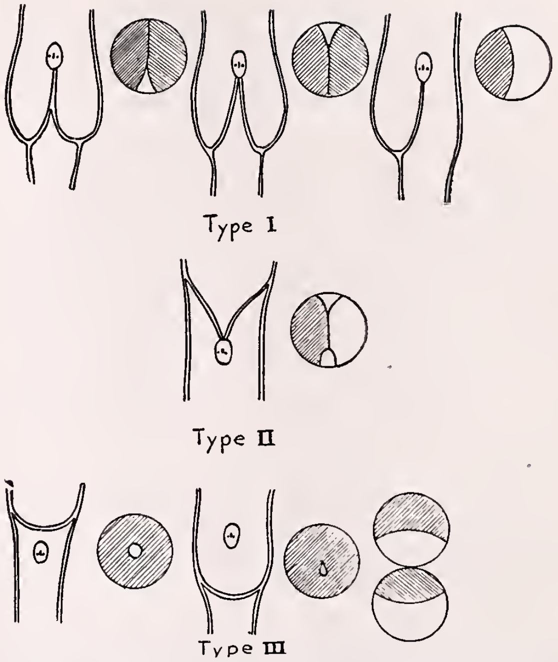
Cases reported to 1926[1]:

Prior to 1919		
Living	3	
Postmortem	24	
	—	27
Since 1919		
Living	26	
Postmortem	8	
	—	34
		—
Total		61

This increased recognition since 1919 has followed Young's article,[2] in which he classified these valves, emphasized their clinical significance and reported the successful surgical treatment of eight personal cases.

Pathology. The valves are folds of mucosa which balloon out during urination and obstruct the urethra. They have their origin in an exaggeration of the various mucosal folds and ridges of the normal urethra in the embryo. Each passage of urine tends to mold these folds into valve-like structures which in turn increase the obstruction. With such an origin their arrangement may be varied, although they usually conform to one of three types. The first, the most common, consists of a ridge on the floor of the urethra, extending downward from the verumontanum. It divides into two processes which turn outward and are attached to the entire circumeference of the urethra (figure). In the second the folds extend directly upward to the vesical neck, where they are attached in the same manner as in type one. In the third the valve has no relation to the veru but may be situated anywhere in the posterior urethra. It is an annular fold, attached to the entire circumference and has a small opening in the middle. Because of its resemblance to the iris it is called the iris valve.

Varying degrees of urinary obstruction may exist, in some instances so slight that it is not noticed. Usually it is definite and produces secondary changes as in any other obstructive uropathy, namely, dilated bladder, hydroureters and hydronephroses.



Various types of congenital valves of the posterior urethra. In case 2 there was a combination of Types I and III (After Young, Frontz and Baldwin).

Symptoms. These are local and general. The former consist in difficult, frequent and painful urination with dribbling and retention. They are aggravated by the inevitable infection. With the gradually increasing renal insufficiency and infection there is anorexia, loss of weight, anemia, chills and fever. In children distention of the abdomen, caused by the dilated bladder, hydroureters and hydronephroses, is a common finding. These general symptoms may be so severe as to mask the local signs and the condition goes unrecognized until after death. The terminal symptoms are those of uremia.

Diagnosis. The diagnosis is easy, if the possibility of the presence of these valves is kept in mind. Any difficulty of urination in young boys, especially if there is a persistent pyuria, should arouse suspicion. The importance of the same systematic urologic examination in children as in adults cannot be overemphasized. The presence of a residual urine should be determined by catheterization. In advanced cases with a dilated, decompensated bladder the urine should be withdrawn gradually or a decompression apparatus used to prevent uremia or hemorrhage.

Cystograms and urethrograms are of value, not only in outlining the lower urinary tract, but also the upper, for in advanced cases the gravity back flow will demonstrate the enormously dilated ureters and kidney pelves. Cystoscopy is necessary to determine the presence of the valves, their variety and the treatment indicated. This condition has been missed and incorrectly diagnosed by cystoscopists who neglect to explore the posterior urethra.

Treatment. Urethral dilatation is of no value. The valves must be removed either by fulguration through a cystoscope, by the baby punch (Young) or by suprapubic or perineal operation. Fulguration or the punch operation is usually sufficient but, if a major operation is indicated, the perineal approach is better than the suprapubic because of the deep situation of the valves and the difficulty of access through the bladder. Preoperative preparation to improve and stabilize renal function is essential.

Case 1. C. R., age 2 years. Complaint, increased frequency and painful urination. Loss of weight.

Past history. Full term child. Delivery normal. Breast fed until nine months. No acute or infectious disease.

Present illness. Has always been fretful. There has been increased frequency of urination since birth and recently dribbling. Patient cries while urinating. There has been a urethral discharge for the past two months. Is losing weight. The appetite is poor and there have been several attacks of nausea and vomiting.

Urologic examination. Abdomen distended. Tenderness in both lumbocostal angles. Bladder palpated midway to umbilicus. External genitals are normal. The distended bladder can be palpated by rectum.

Laboratory data. Urethral smear, staphylococci and B coli. Urine, turbid. Specific gravity, 1005. Albumin trace. Microscopically, pus cells, 40-50 H. D. F. and motile rods. Culture, B. coli.

Phthalein 1st hour, 14 per cent; 2nd hour, 16 per cent; total, 30 per cent. Blood chemistry. Nonprotein nitrogen 80 mg. per 100 c.c. Urea nitrogen 50 mg. per 100 c.c. Creatinin 3 mg. per 100 c.c.

The bladder was slowly emptied during a period of two days by an indwelling ureteral catheter (No. 7 French).

Cystoscopy. A number 12 French cystoscope passed easily. The residual urine was 250 c.c. Bladder capacity 700 c.c. Bladder negative except for fine trabeculations in the basal zone and patent dilated ureteral orifices. Vesical neck dilated. Posterior urthroscopy showed valves as arranged in type II of Young's classification.

Treatment. The valves were fulgurated. Permanent catheter drainage for two weeks. Fluids were forced and intravenous hexamethylenamine given every other day for ten days.

Course. The renal function as measured by phthalein improved and the nonprotein nitrogen retention was reduced to near the normal upper limits. There was some dysuria which gradually disappeared. Last examination showed 25 c.c. residual urine. Patient's health has greatly improved.

Case 2. J. W., age 27. Referred because of pain in the back and difficulty in urinating.

Past history. He has never been well. Has had difficulty in urinating ever since childhood. He was told that he would strain and scream with pain. Has had several prolonged illnesses, diagnosed as malaria and typhoid fever. Had gonorrhea in 1919.

Present illness. Eight years ago began to have backache and attacks of chills and fever. The dysuria which has always been present was increased at this time. In the past year sounds were passed under general anesthesia and several false passages made.

Urologic examination showed an infected urine and definite obstruction in the posterior urethra to instrumentation. After it had been dilated with filiforms and followers, a child's cystoscope (No. 16 French) was passed and congenital valves, a combination of type I and III, were found. The iris valve was distal to the verumontanum. A urethrogram showed a marked dilatation behind the valve. The urethra was infiltrated because of repeated instrumentation and long continued infection, so that a posterior urethroplasty through a perineal approach was elected rather than cystoscopic fulguration.

Operation. A longitudinal, perineal incision was made down to the anus and then continued on either side, making an inverted Y. The apex of the prostate was exposed as in a perineal prostatectomy. Since the iris valve was well forward and a good exposure necessary, the bulb was dissected from the anterior layer of the triangular ligament for about 2 cm. and an incision made through the bulbous urethra, the triangular ligament and up to the prostate. The valves were removed, the redundant posterior urethra excised and the whole urethra closed over a No. 28 catheter.

Course. The catheter was left in for ten days. There was a slight perineal leakage after its removal which entirely disappeared in a week. A No. 30 French sound can now be passed and urination is normal. The renal infection was treated by pelvic lavage.

The points for emphasis are (1) the necessity for a thorough cystoscopic and urethroscopic examination in children with urinary disturbances, (2) the recognition of the possibility of this type of obstruction not only in children but in adults, (3) the early removal of obstructing values before there is irreparable renal damage.

BIBLIOGRAPHY

1. Hinman, F., and Keetzman, A. A.: Congenital Valvular Obstruction of Ten Posterior Urethra. Jour. Urol., XIV, 1925, pp. 71-112.

2. Young, Frontz, and Baldwin: Congenital Obstruction of Ten Posterior Urethra, Jour. Urol., III, 1919, pp. 289-365.

INJURIES OF THE LOWER URINARY TRACT

REPORT OF TWO CASES

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With the great increase in serious automobile accidents, more fractures of the pelvis are seen than ever before. Due to the close anatomic relation of the bladder and urethra with the bones comprising the pelvis, it is not surprising that the lower urinary tract is occasionally injured. According to a recent study,* 9.8 per cent of all fractured pelves were complicated with injuries of the bladder or urethra.

The urethra is more often injured than the bladder because of its fixation below the pubic arch. If the rami break or are quickly separated, the urethra is subjected to a pull which can tear it completely across. The bladder, on the other hand, is elastic and only attached at its base. Injuries to it are essentially penetrating wounds.

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* Injuries of the Urethra and Bladder. Jour. Urol., Vol. XV, No. 6.

With evidence of a pelvic fracture, a wide separation of the pubes, with hematuria or obstruction of the urethra, the treatment should be surgical as soon as the patient has passed the primary shock. A suprapubic exposure of the bladder should be made. At this time the bony fragments of the pelvis can be manipulated, good approximation secured, and the body encased in plaster.

Two types of injury are here presented, one with multiple fractures of the pelvis with a punctured wound of the bladder, and the other a wide separation of the symphysis, producing a transverse severance of the urethra.

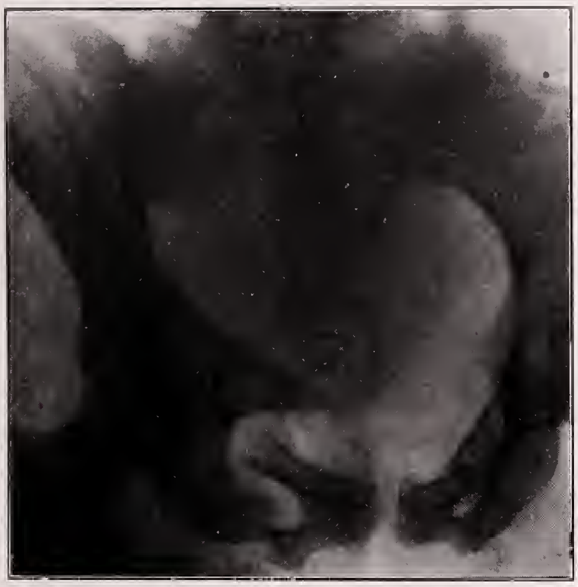

Fig. 1. L. L., female, age 21, multiple fractures of pelvis with marked displacement of fragments. One of these punctured the bladder. Before reduction of the fractures.

Case 1. L. L., female, age 21, stenographer. Always enjoyed good health, no constitutional disease present.

On September 18, 1926, she was injured in an automobile accident. She was unconscious and the actual condition of her pelvis was unsuspected and undiagnosed until the roentgenogram was made.

Her subjective symptoms were shock, a great deal of pain through the pelvis on any motion of the body, tenderness over the lower abdomen, and inability to micturate. After the injury the objective symptoms were pallor, temperature 100°, pulse 115, fair volume, blood pressure 120-70. Height 5 feet 1 inch, weight 100 pounds. Hemoglobin 65 per cent, red cells 3,200,000, whites 14,000.

There was a lacerated wound of the scalp above the right ear, which had been sutured. The left leg, lower third, had an abrasion of the skin. The abdomen was moderately distended and tender above the pubes. An increased area of dullness above the bladder was noted. Crepitus was easily elicited by palpation of the crests of the ilia. An attempt was made to catheterize the bladder and a few drops of blood were obtained.

A roentgenogram did not show injury of the vertebrae. The pelvis, however, was fractured in several places (fig. 1.). The left wing of the ilium was fractured above the acetabulum, with a sharp spicule pointed towards the center of the pelvic basin. The lower portion of the ilium was rotated inward, markedly reducing the lateral diameter of the pelvis. The superior and inferior rami of the left pubic arch were completely broken off and displaced downward. The right superior ramus was also fractured with moderate displacement.

Operation: Fourteen hours after the accident, under general anesthesia, a suprapubic exposure of the bladder was made. The peritoneum was infiltrated with blood. It was soft, however, and apparently not injured. The prevesical space was full of blood and urine. Sharp fragments of bone were soon encountered. One of these from the left ilium had punctured the left lateral wall of the bladder, making a hole 2 x 3 cm. It was impossible to withdraw this fragment until the fracture had been reduced. The bladder wound was then closed from the outside. A rubber drainage tube was inserted into the cystotomy incision and two purse string sutures used. A Penrose drain and two yards of 3-inch packing were used in the prevesical space. These controlled the oozing very effectually. A permanent catheter was placed in the urethra. After dressings were in place, an extensive plaster cast was applied, with the legs well abducted.

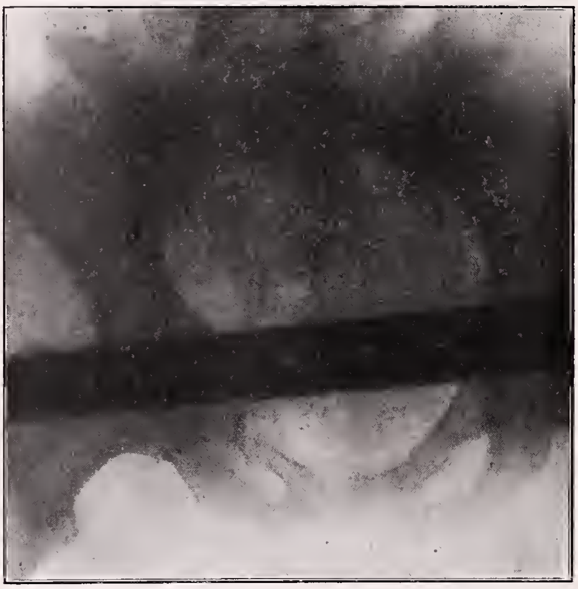

Fig. 2. Same case as fig. 1. Twelve weeks after the reduction of the fractures, showing good union but a contraction of the lateral diameter of the pelvis.

The drains and packings were gradually removed. At the end of six weeks the suprapubic wound was healed and the urine almost clear. At the end of eleven weeks she was able to walk without limping. There is now no shortening of the legs, and the hip joints are normal. There is, however, a lateral contraction of the pelvis which may interfere with pregnancy and labor (fig. 2).

The second case is somewhat different. Here no fracture existed but there was a tearing apart of the symphysis pubis.

Case 2. G. B. M., male, 49, electrical engineer, was injured in an automobile accident. After regaining consciousness he complained of pain over the pubes and a desire to void which was impossible. His last micturition was at 4 p. m.

Examination: Height 5 feet 8 inches, weight 190 pounds. Blood pressure, 90-50. Pulse 84, temperature 97° at 9:30 p. m. The reflexes were normal.

A laceration of the forehead and left forearm were dressed. There was increased suprapubic dullness and tenderness. A Coude rubber catheter No. 14 French met an impassable obstruction at the vesical orifice. No urine was obtained. A roentgenogram of the pelvis showed a separation of the symphysis of 3 cm. but no fractures.

Treatment. Under general anesthesia a suprapubic cystotomy was performed. The bladder and peritoneum were intact. In the prevesical space, blood and urine were encountered. A metal sound was passed into the urethra and it emerged just anterior to the prostate. The bladder was then opened; it contained 300 c.c. of clear urine. By manipulation of the sound the vesical end of the urethra was found and the sound was introduced into the bladder. A rubber catheter was then threaded on the end of the sound and the latter withdrawn through the urethra. A rubber drain was introduced into the bladder and secured by a purse string suture. The prevesical space was drained by a rubber drain and packed with two strips of gauze which controlled the bleeding. The pelvis and thighs were then encased in plaster. At the end of three weeks the urethral catheter was removed and the patient voided naturally.

In closing, attention is called to two points.

1. Do not be afraid of free drainage. It controls hemorrhage, and infection is less liable to take place.

2. As soon as you are reasonably sure that the bladder or urethra has been seriously injured, perform a suprapubic cystotomy.

Effect of Diet Low in Calcium on Fertility, Pregnancy and Lactation in Rat. Donald Macomber, Boston (Journal A. M. A., Jan. 1, 1927), used two series of rats. Twenty-eight animals were placed on diet A, the control diet, and one containing an adequate amount of calcium. Thirty-five were placed on diet B, which was precisely identical with A in every respect except that it contained only a minute trace of calcium as far as the diet itself was concerned. The results were as follows: Diets low in calcium do not produce sterility in the adult rat but they do affect the fertility by increasing the intrauterine mortality. In the rat, pregnancy makes relatively small demand on the mothers because the young are largely cartilaginous at birth. Even when the diet is very low in calcium the fetus is normal at birth both in weight and in calcium content. To a certain extent, it acts as a parasite on the maternal organism and draws its calcium from her reserve. This is shown by analyses of the maternal calcium, by roentgenograms of the bones, and by the specific decalcification of the teeth. In the rat, all these effects are intensified by lactation. The mother rapidly loses calcium from her body to supply the needs of the growing young; but the young are now not able to get all they need and soon show signs of a lack of calcium by stunting, weakness and often death. This is to be contrasted with the fetal ability to live at the expense of the mother.

FIBROID TUMORS COMPLICATING PREGNANCY

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In the last three hundred cases of pregnancy, all except one sufficiently advanced to give viable babies, I have encountered fibroids of the uterus in ten, or one in thirty. This apparent frequency necessitates a word concerning the diagnosis. This was based upon the presence of a tumor found on repeated physical examinations during pregnancy, labor and the puerperium, in some cases prior to pregnancy and in others throughout a second pregnancy. I have eliminated not a few where I was suspicious of a tumor but could not definitely establish the diagnosis on subsequent examination. One with a palpable tumor during pregnancy is excluded because the patient moved from this city, following the delivery of twin boys at the seventh month, thus nullifying the possibility of a complete diagnosis. Another had had a full term normal delivery. She went through a second normal pregnancy and labor. I examined her under an anesthetic eleven months postpartum because of menorrhagia and dysmenorrhea and curetted the uterus. There was a submucous fibroid low in the right side of the uterus and two more in the upper part of the body. This case is not included in the report because the tumor was not found until eleven months postpartum. Neither have I included the cases in which a fibroid was diagnosed as the cause of an abortion.

Of the ten cases six were multiparæ. All had had a miscarriage. One, after a threatened abortion at the nineteenth week, later felt motion. Without apparent cause at the fifth to sixth month the membranes ruptured and in two and a half hours the abortion was complete. One had two miscarriages, each time with a marked toxemia. One had a miscarriage, followed by two full term pregnancies and then a second miscarriage. Another had a miscarriage and subsequently after a period of marked toxemia was delivered a few days prematurely. One had a miscarriage at three months, due presumably to a severe cold and overwork. One had a miscarriage four years previously.

The age incidence is interesting as here noted: 26 years, 1; 29 years, 2; 30 years, 1; 31 years, 1; 32 years, 1; 33 years, 2; 34 years, 1; 38 years, 1. Seven cases were thirty or more years of age at the time of the last menstrual period.

Puberty occurred in one at age eleven years, four at twelve years, one at thirteen, three at fourteen and one at fifteen years.

Regarding sterility. Of the four primiparæ, two menstruated only twice following marriage; one menstruated four times only following her second marriage; one was married four and one-third years before pregnancy occurred. Of the six multiparæ one was sterile for two years following marriage and then nearly four years elapsed before the second pregnancy. This was the one with multiple tumors, in whom because of tuberculosis hysterectomy was done. The other four multiparæ had the first pregnancy within three months after marriage.

Menorrhagia was present in four, and absent in six. Four had dysmenorrhea and six had none. Two had both hemorrhage and pain and four had neither.

The course during pregnancy. One case had secondary anemia which improved greatly. One had diabetes without trouble throughout pregnancy. Nausea and vomiting were severe in one case. A moderate toxemia required induction of premature labor in one. Severe uterine pain occurred in one, due to necrobiosis of the fibroid necessitating operation. Moderate pain in one. Hemorrhage during pregnancy was slight in two cases, requiring nothing other than rest. In another case the hemorrhage was severe at the third month. One case required interruption by hysterectomy because of active tuberculosis and pansinusitis. Five cases, or one-half of the series, presented no more symptoms during pregnancy than the average case.

The effect of labor. A moderate antepartum hemorrhage occurred in one, and was slight in another. Postpartum hemorrhage was more than moderate in two. This was due to a partial separation of the placenta from the surface of the fibroid and each required manual removal.

Induction of labor was necessary in one because of toxemia. I have just delivered her of a second child and the labor was normal. Low forceps were applied once because of arrested labor. Two cases did not go into labor. In one a Porro cesarian was done because of a contracted pelvis and fibroids, and in the other a hysterectomy. Thus six cases required assistance during pregnancy or labor. The hysterectomy and the cesarian section were done for conditions other than the fibroids. We may eliminate the induction of labor case, as the toxemia was not dependent on the fibroid, for she has had a subsequent normal pregnancy and labor with the same fibroid. Thus we have only three cases in the series requiring aid, one with low forceps and two with manual removal of the placenta. It is questionable if the fibroids per se necessitated the application of forceps.

The presentation and position of the nine cases reaching viability were as follows: One was a frank breech, eight cephalic, five occiput to the left anterior, two occiput to the right anterior, and one an occiput to the right posterior.

Puerperium. A temperature over 100.4° after the first twenty-four hours postpartum is considered a morbidity. There were three cases in this class, including the cesarian section. In one the temperature was 103.0° on the twelfth day, due to pyelitis. The other case was a very nervous woman and the breasts filled rapidly and excessively on the third day causing great pain, at which time the temperature rose to 101.2° but was never over 99° thereafter. In no case was the lochia excessive.

Subsequent menstrual course. Obviously from this consideration will be excluded the Porro cesarian case. The hysterectomy case had a very slight flow for two days, three and one-half weeks after the operation, and for a few hours four weeks later. All of the patients menstruated during lactation except two, one of whom was delivered two and one-half months ago and the other as reported below. Menstruation was reestablished postpartum at the fourth week in one case and she nursed her baby eight months. Two cases menstruated regularly after the sixth week postpartum, one of whom is still nursing her baby at the sixth month. The other nursed hers for ten months. At the tenth month two women resumed menstruation. Lactation in one of these was normal for nine months and in the other until she again became pregnant. Menstruation was reestablished at seven one-half months in two cases, this being one and one-half months after cessation of lactation in one. The other at the eighth month is still nursing her baby. Only one case had menorrhagia postpartum and none had dysmenorrhea. The tumor was not palpated in the two hysterectomy cases, neither was a tumor found in the myomectomy case. In the seven remaining the tumor was palpable as long as the patient was observed subsequent to delivery, and in three it was noted during the following pregnancy.

CASE REPORTS

Case 1. Mrs. G. F., age 30, married seven years. Puberty was at age eleven. Menstruation has been regular every twenty-eight days. It is a moderate flow for two to six days. Dysmenorrhea is quite severe.

Past history. She had scarlet fever at ten years of age which was almost fatal. While in Alaska she had two miscarriages five and six years ago, of two and three months duration respectively. The first was due to overwork because of smallpox in the family; she was curetted. The second was therapeutic in Nome, after nearly fatal hyperemesis while ice-bound on an island.

The first consultation for the present pregnancy was after six weeks of amenorrhea. The last menstrual period was April 28, 1923. The uterus is the size of one to two months pregnancy. Its anterior surface is very irregular. The right ovary is twice normal size, cystic and prolapsed into the cul de sac, but is not adherent. The pelvis is decidedly contracted of the funnel type. The ischial spines are 5 cm. apart, the transverse diameter of the outlet is 5.5 cm. and the posterior sagittal is only 5 cm. There is a right nephroptosis.

Early in this pregnancy there was much nausea and vomiting with loss of weight. At the fourth month during an electrical storm, she was hurled from the telephone to the opposite side of the room and received several electric burns. The sixth month the ureter became obstructed with a resultant pyelitis which subsided. The blood pressure was 122 or under and urine was negative except during the pyelitis.

January 27, 1924, labor started with pains. She was removed to the hospital at 10 p. m. and an immediate cesarian section was performed, the contracted pelvis necessitating this. We found the uterus filled with numerous myomata, all sizes from a millet seed to 3 cm. in diameter. The fetal head was engaged in right posterior position. The baby was delivered while the uterus was still in the abdomen. This was followed by a supravaginal hysterectomy because of the myomata. The female baby weight 7 pounds and 3 ounces.

The postoperative course was uneventful. The highest temperature was 100.4° within twenty-four hours, and 100.8° on the second day, and never over 99.4° thereafter. The pulse was rapid the first three days, then between 74 and 84. Catheterization was not necessary. The bowels moved with an enema within twenty-four hours. The abdominal incision healed well. The right nipple fissured. Both mother and babe were discharged on the seventh day in fine condition.

The pathologic report. The uterus weighs 746 grams. It measures 15 x 11 x 12 cm. The uterine walls are about 3 cm. thick. There are several fibroids in the uterine wall. There is practically no lining of the uterus. Near the surface there are markedly large blood spaces. Microscopic section shows part of the uterine wall apparently just beneath the attachment of the placenta, where there are numerous blood cells, round cells and decidual cells, extending rather deeply into the muscle walls. Diagnosis: Puerperal uterus with several fibroids, intramural and subperitoneal.

At the end of the first month the mother developed a right intramammary abscess. This subsided rapidly after incision and drainage. The patient made a good recovery until the seventeenth month (Febraury 10, 1925), when she complained of severe pain in the right ovarian region. There had been a slight flow each month. The examination showed the right ovary prolapsed, large and tender. The cervical stump was high. Four months later the pain was worse and with recurrent attacks of abdominal colic, accompanied by nausea and vomiting. These increased in frequency and severity. Gastrointestinal radiographs showed partial obstruction of the intestines, due to adhesions between the cervix, ileum and sigmoid.

At operation we found large cystic ovaries. The ileum and cecum were firmly attached to the covering of the cervical stump. There were marked varicosities in the right broad ligament. The intestines were freed and both ovaries removed and the round ligaments sutured to the cervix and to each other. The recovery was excellent.

Case. 2. Mrs. O. N., age 34 years, married four and one-third years. Menstruation began at the age of twelve years, recurring every twenty-eight days, lasting four days and only slightly in excess. She has not consulted a physician since childhood.

Present pregnancy: She called me first two months following her last menstruation of May 10, 1925. The examination showed no abnormality and the uterus the proper size for the period of amenorrhea. The fourth month started with considerable pain in the uterus. This increased in intensity and by the end of this month was accompanied by uterine cramps.

Examination disclosed a uterus the size of a four months pregnancy. At the right cornu was a firm round mass three to four inches in diameter. Half of the mass was above the level of the umbilicus. It was of irregular consistency, very sensitive, and had a short exquisitely tender pedicle. Pressure on the tumor caused nausea. She was watched closely for three days with all the symptoms increasing. Therefore a laparotomy was advised.

This was done August 18. We found a large pedunculated subserous fibroid four inches in diameter, arising from the right cornu of the uterus. The pedicle was one-half inch long and one-half inch by one and one-half inches at its attachment to the uterus, and was partially twisted. The tumor was of irregular outline and consistency and was edematous. The pedicle contained large blood vessels. There was a small subserous fibroid in the midportion of the posterior wall. The ovaries were normal.

The tumor was expressed through the incision, the pedicle dissected free, the vessels clamped and the mass removed. The uterine wound was closed with deep interrupted sutures, which were covered with Blair Bell mattress sutures and a third row of continuous sutures. Then the entire wound was covered with the broad ligament and tube.

Postoperatively the patient was very nervous and apprehensive. The course was excellent. The temperature rose to 100° within twenty-four hours, to 99.4° on the second day, 99° on the third and was then normal. The pulse ranged between 70 and 80, reaching 90 only twice. There were some lower abdominal pains four to eight hours after the operation and severe backache in twenty-two hours. These were controlled with morphine and there was no other disturbance. The bowels moved with an enema in twenty-six hours. She voided the seventh hour. The sutures were removed the tenth day and the wound healed fine.

Pathologic report: The specimen shows a tumor mass 12 cm. x 10 cm. x 8 cm. Cross section shows marked edema with various areas of reddish-brown discolorations throughout the mass, i. e., areas of necrobiosis. Microscopic section shows a piece of fibrous tissue, large areas of which show little or no staining of the nuclei and an infiltration of round cells. There are areas of edema. Diagnosis: Necrotic change in fibroid.

The pregnancy continued without interference. There was only slight edema late, though considerable abdominal pain throughout.

Labor ensued twenty-six weeks postoperative (February 16, 1926). The first stage ended in sixteen hours and after three hours of good second stage pains low forceps were applied because of arrest. The third stage was fourteen minutes and spontaneous. A male child, weighing 7 pounds 14½ ounces. The puerperium was normal and morbidity nil.

The subsequent course was normal except for some pain in the left side of the pelvis. But no tumor was found.

Normal menstruation was reestablished at the thirty-third week postpartum.

Case 3. Mrs. E. J. H., age 26 years, with a negative menstrual history. This case is reported because the first pregnancy ended in spontaneous abortion at the second month. In the second there was marked toxemia, induction of labor with forceps delivery and manual removal of the placenta in small pieces.

I attended her in the third and fourth pregnancies. At the third month in the third, while standing, there was a sudden hemorrhage from the uterus. This came without warning and was so rapid that the blood formed a large pool on the floor. She was rushed to the hospital and watched closely, but there was no recurrence and only an occasional slight uterine contraction. At the fourth month there was a slight red flow. The pregnancy progressed normally. During the third stage of labor the placenta separated in a normal manner except at its attachment to a submucous fibroid. The hemorrhage was brisk and excessive. The placenta was removed manually and showed an area of fibrosis about 3 cm. in diameter. She has recently been delivered at full term without trouble at any time.

Case 4. Mrs. D. C., age 32 years. Puberty was at fifteen years. Menorrhagia has occurred regularly every four weeks, continuing five to seven days and requiring turkish towels for napkins. This has produced a secondary anemia with red blood cells 3,750,000 and hemoglobin 45 per cent. There has never been dysmenorrhea.

She consulted me when the second menstruation failed to appear. She had been married three months. At that time a firm nodule two to three cm. in diameter was easily palpated in the left side of the uterus. The anemia improved greatly during the pregnancy. But always there was weakness and occasionally vertigo. Albuminuria was present in small amounts, and the fibroid was palpable at all times. A slight oozing persisted for four hours antepartum but ceased with the onset of labor, which was normal and the male child weighed nine pounds five and one-half ounces. The puerperium was normal and the fibroids always palpable.

A moderate menorrhagia occurred at the fourth week postpartum, with normal flow the tenth week. But the fourteenth week the menorrhagia necessitated rest in bed and administration of ergot. There has been a gradual improvement during the past year. The fibroid has been easily found on each examination.

Case 5. Mrs. N. W., age 29 years. Menstruation started at the age of twelve and has recurred regularly every twenty-eight to thirty days, three to four days duration and of moderate quantity. There are cramps low in the pelvis for the week premenstrual and throughout the period, also a knife-like pain radiating downward along the legs, which is relieved by the onset of the flow. She has married twice, eleven years and four months ago respectively.

The present complaint. She has severe nausea all the time and pain in the left side of the pelvis, same as the premenstrual. She menstruated normally twice in December, the first and twenty-third. The night of January 30 she passed a small quantity of blood but none since. She has severe nausea all the time and pain low in the left side of the pelvis the same as premenstrual.

Past history: Only the diseases of childhood and ptomaine poisoning last year. She had two doubtful miscarriages during the first marriage, each time a slight menorrhagia followed by a few weeks of amenorrhea.

Examination shows a thin woman of 5 feet 3 inches, weighing 104 pounds. There is a slight goiter. The chest and abdomen are negative. The soft cervix lies low and far posteriorly. It is of normal size and shape, and the os is not open. The uterus is slightly enlarged. It is a little broader, especially on the left side, where it bulges the size of a walnut into the tubal region. This mass is harder than the ovary and there seems to be a depression in the fundus between it and the main portion of the uterus, a semblance to bicornate uterus. The tentative diagnosis is probable intrauterine pregnancy, plus uterine fibroid or bicornate uterus.

The seventh week of amenorrhea there was a red serous discharge sufficient to soil one napkin, but no pain and no more flowing. Examination at the ninth week showed the left uterine mass larger, as though this contained the pregnancy. The right side was slightly larger than at the first examination and still very firm. The tenth week examination disclosed a continuance of the above mentioned process. In addition the left round ligament could be palpated as it leaves the upper pole of the left mass. At the fifth month both masses had increased in size but the left the more, and this mass shows a depression in the mid portion of its upper surface.

Nineteen days (August 2, 1926) before delivery this depression presisted. The left horn of the mass was very soft and the right horn hard, evidently the baby's head. The breech was low. Dr. C. H. Thomson confirmed the diagnosis with a radiograph.

I attempted external version without success. This was six weeks before the expected date of confinement. The following day at 11 a. m. she had slight pains and entered the hospital at 7 p. m. with a moderate bloody discharge, the frank breech presenting fully engaged, S. R. A. At 10:30 the membranes ruptured and in fifty minutes the breech was in sight. The baby delivered easily at 11:48 and the third stage ended spontaneously in twenty-two minutes. The intact placenta was of very small circumference, though fully twice thicker than the average. Also there was a velamentous insertion of the cord. The premature female weighed 5 pounds 1¼ ounces. She gained rapidly.

The mother's temperature was 101.2° on the third day, due engorged breasts with great pain in a very nervous patient. There was a slight flow for six weeks postpartum. She reported the eighth week with no discharge, no backache and feeling well. The examination showed all in excellent condition. The uterus was normal in size and consistency, anteflexed and anteverted. In the lower right side of the body is a hard, rounded mass the size of a walnut.

The remaining five case histories are not given because the fibroids were a coexisting condition and not a definite complication.

Roentgen-ray Diagnosis of Pleural Effusions, General and Local. L. R. Sante, St. Louis (Journal A. M. A., Jan. 22, 1927), regards roentgen-ray examination of the chest of importance in the diagnosis and localization of pleural effusions. Fluoroscopy should never be relied on alone, however, for diagnosis, and should always be checked by radiographic examination. The roentgen-ray characteristics of pleural effusions are: In general effusions: When the lung is well areated and is freely movable: 1. There is a dense shadow occupying the lower portion of the chest. 2. The costophrenic sinus is obliterated. 3. The upper border is curved, concave, extending upward and outward from the hilum toward the axillary line, showing little, if any, change, on change of position of the patient. 4. There is displacement of the heart and mediastinal structures in large effusions, or, when these structures are not displaced, a persistence of the areation of the apex. 5. Diaphragmatic shadows are obliterated, and there is a continuation of the shadow of the effusion with that of the liver or spleen. When the lung is consolidated or fibrosed and has lost its resilience, there is a ribbon-like shadow along the parietal wall of the chest.

FIBROMYOMA OF THE UTERUS*

REPORT OF AN ATYPICAL CASE

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SEATTLE, WASH.

Mrs. D., age 42, was referred to me for operation September 1, 1926. No past history of any importance. Mother of four children, oldest 11, youngest 3½.

She has been conscious for the past year of a gradually growing tumor in the lower abdomen. She was told by a doctor who examined her in April, 1924, (fifteen months after her last baby was born) that she was about four and one-half months pregnant. At that time he thought she might have a tumor. About two years later she was seen by the same doctor who told her she had a large, fibroid tumor and an operation was advised. She had been troubled for the past two months with leukorrhea and once or twice had flowed a little excessively. Otherwise she was not conscious of anything except the enlargement of her abdomen.

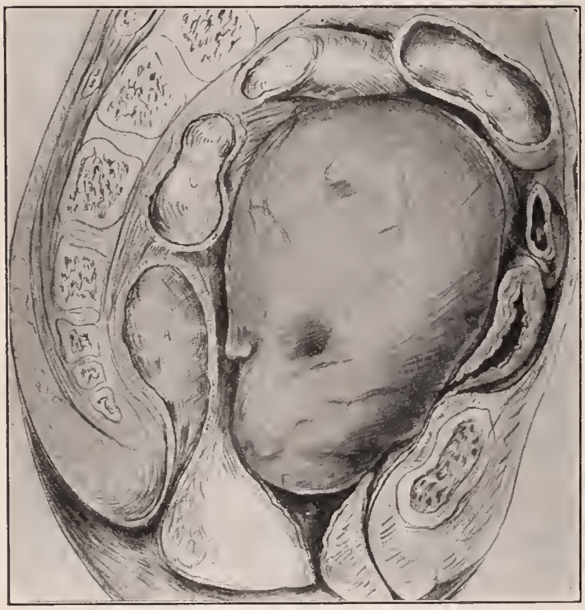

Fig. 1. Drawing shows the position of tumor in the abdomen with displacement of rectum (A), bladder (B), small intestines (C).

Examination. She had a rather pale, somewhat emaciated and care-worn appearance. She was handicapped in her home life by neglect. There was a pelvic tumor extending well above the umbilicus about the size of a seven months pregnancy. Vaginal examination revealed a smooth tumor about the size of a fetal head which completely filled the vagina and wedged up against the pubic bone so that it could be displaced but very little. My impression was that she had a large, pediculated fibroid polyp.

Operation September 7. Patient prepared for abdominal and vaginal operations. I expected to remove a pediculated, fibroid polyp by the vaginal route. Double episiotomy was done and the tumor explored by vaginal examination, when it was found that it was an extension of the abdominal tumor into the vagina. Accordingly the tumor was approached by the abdominal route. An incision twelve inches long was made, extending from the pubes well above the umbilicus, and the tumor explored. The round and broad ligaments were incised on both sides and an unsuccessful attempt made to deliver the tumor. It was quite firmly fixed except for a hinge-like movement. There were no adhesions. I considered bisecting longitudinally but thought it might cause considerable hemorrhage and not help me materially. Finally I decided to amputate the tumor transversely and remove it in two sections. I made a transverse incision a little below the midportion of the tumor and about midway between the navel and pubes. This incision exposed the extreme upper part of the elongated vagina. Having this land mark, it was comparatively easy to follow entirely around the growth, keeping close to the tumor to avoid the displaced ureters. The ureters were missed by only a fraction of an inch. The tumor had pressed on the trigone of the bladder, obstructing the ureters at the extreme lower end and pulling them away from the pelvis. The weight of the tumor was eight pounds.

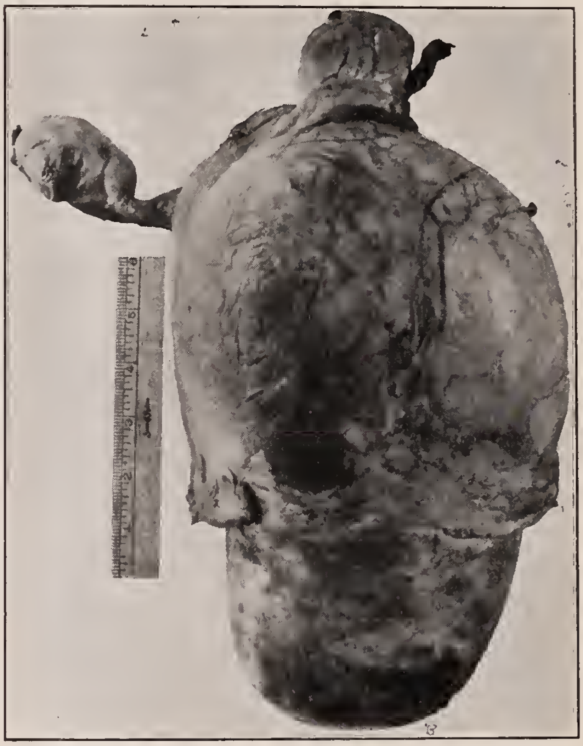

Fig. 2. A to B is portion of the growth that projected into the vagina.

The features of especial interest were (1) the rapid growth of the tumor and the peculiar way it grew into the vagina displacing the bladder and the ureters; (2) the enormous elongation and widening of the vaginal canal; (3) no hemorrhages, although it was a submucous type of fibroid; (4) absence of bladder symptoms or obstruction of the bowels.

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* Read before a Meeting of the Staff of Swedish Hospital, Seattle, Jan. 5, 1927.

CARCINOMA OF CERVICAL STUMP

FOLLOWING PARTIAL HYSTERECTOMY*

CASPAR W. SHARPLES, M.D.
SEATTLE, WASH.

Surgery is done for three purposes: first, to save life; second, to make life more worth while; third, to prevent more serious trouble, of whatever nature that may be. One class of cases now done is imperative, and the other two of this classification are elective so far as the patient goes, while they may be more or less imperative from the standpoint of the surgeon.

Hysterectomies for fibroid tumors are being done more generally as we realize the many dangers that may occur from leaving them inside. A review of the literature shows that carcinoma occurs in the cervical stump in 2 per cent of cases following supravaginal hysterectomy. Perhaps this danger has not been generally realized. If we are removing a great many of these fibroids for the purpose of preventing malignant degeneration of the fibroid itself and are leaving a surface in the cervix that is potentially malignant, perhaps we are not doing our duty by these patients.

In three of my patients carcinoma has developed after supravaginal hysterectomies. I wish to report these cases and to add short notes upon two others. The first one is of a good deal of interest.

Case 1. In 1911 I removed a large uterine fibroid together with the left ovary, the patient making an uneventful recovery. I next saw this woman in consultation in 1916, at which time there was a bright red berry-like body present in the mouth of the cervix which bled easily. In fact, the woman's attention was called to her condition by the presence of hemorrhage. This had the appearance of a polyp but to rule out the possibility of malignancy a biopsy was done. The pathologist reported a cylindroma and the stump was removed.

In 1923 I removed a scirrhus carcinoma of the left breast. Following the development of cough in April, 1925, x-ray examination showed metastases in the lung and in August of the same year she died from general carcinomatosis. This woman had had one child.

Case. 2. Mrs. W. F. C. In January, 1921, I removed a cystic ovary and performed a supravaginal hysterectomy for the removal of a fibromyoma, coming out of the cervical mucosa. This woman had no children. The pathologist reported an ordinary type of fibroma and ovarian cyst, and there was no evidence of malignancy. Her recovery was uneventful.

On October 31, 1925, the history shows that she was having hemorrhage from the vagina, not profuse, and has had no trouble of this kind since her operation four years ago, and has been especially well. Physical examination at this time revealed nothing abnormal but I insisted upon doing a diagnostic curettage, which revealed a growth in the mouth of the cervix. When the curette was inserted a large amount of broken down material escaped. We proceeded at that time to finish the hysterectomy by removing the stump.

The pathologic report was as follows: "Section shows uterine scrapings with typical cancer cells. The cancer cells are large and irregular in shape and show numerous myotic cells. Section of the base of the cervix shows the same type of tissue growing rapidly into the muscular stroma. Diagnosis: Carcinoma rapidly growing." This woman died two days after the operation. The abdomen was opened and no evidence of hemorrhage or obstruction was found.

Case 3. Mrs. S., age 60, a mother of four children, had a large fibrous uterus but no distinct tumor. It was prolapsed, retroverted and adherent and caused a good deal of backache. She also had laceration of the perineum. She had gallstones.

An operation for the repair of the perineum and cervix was performed, followed by a supravaginal hysterectomy. The cervix was coned out. When she returned two years later, she was having some hemorrhage from the cervix. Examination showed an extensive carcinoma. It was not possible to determine whether the carcinoma had developed in the dilated portion of the cervical canal or in the os itself. She died as the result of this condition.

Case 4. Unmarried, age 41. In February, 1922, I performed a supravaginal hysterectomy for the removal of a fibroid, the largest in my experience. The cervix was coned out. The recovery was uneventful. She returned in March, 1926, complaining of vaginal hemorrhage. Examination showed a small polyp protruding from the cervix. I advised removal but she has not returned.

Case 5. Age 41, mother of five children. Chief complaint, profuse vaginal hemorrhage, no history of leukorrhea. The uterus was enlarged, retroverted and adherent. In February, 1924, a subtotal hysterectomy was performed with the usual coning out of the cervix. The recovery was uneventful.

In October, 1926, she returned, complaining of a slight recurrence of the hemorrhage. Examination revealed a large conical opening in the cervix with a small nodule on the posterior wall which bled easily. This woman promised to return also for the removal of this papillomatous growth but has not done so.

DISCUSSION

These cases are divided into three groups: first, the malignant (3 cases); second, the possibly malignant (1 case); third, the benign (1 case). There is another condition not included in this classification which is exemplified by the following case.

A woman had a large fibroid with a great deal of hemorrhage and a moderate amount of leukorrhea. After the operation she made a good recovery but after a few months returned with a thick viscid mucous discharge which did not yield to any form of treatment.

We do supravaginal hysterectomies in women who have and women who have not borne children. The occurrence of carcinoma of the cervix is more common in women who have borne children. This may be explained by the fact that there is irritation from trauma to the cervix. It has been said also that the discharge from the uterus itself may be of such nature as to produce a constant irritation of the cervical mucosa. In doing a subtotal hysterectomy, therefore, we may be leaving behind a cervix which is potentially malignant because of the previous irritation.

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* Read before the Meeting of North Pacific Surgical Association, Vancouver, B. C., Dec. 10, 1926.

We may also divide these carcinomatous growths into two groups, depending upon the time of incidence rather than upon morphology. If the cervix should become the seat of a carcinoma in half a year to two years after a hysterectomy for a benign condition, it is fair to assume that we have operated on an uterus, the cervix of which was already malignant or potentially malignant. If carcinoma appears after a two year period, it is not reasonable to attribute it to a previous or a potential malignancy. If we do a partial hysterectomy on a woman who has never borne children, there is less probability of malignancy following. If we do a partial hysterectomy on a woman who has borne children, there is more danger of leukorrhea and polyp formation.

The problems are, first, how extensive a hysterectomy should be done; and, second, if a subtotal operation is elected, what measures should be taken to ward off these sequelæ. A great deal of harm is done to patients by the estimate that surgeons may have of their own ability. We have seen many instances in which most valued procedures have been brought forward by the most expert men in our profession, which have been imitated very generally and which have been productive of harm. A supravaginal hysterectomy is apparently an easy operation and is being done by nearly every type of surgeon. As compared to a total hysterectomy it is not necessarily a shorter operation. In the hands of the average surgeon it is a safer procedure. A total hysterectomy in the hands of the skillful surgeon with a well worked out routine operative manual and aseptic technic is practically safe. In large clinics the operative mortality is only a fraction of one per cent greater than in the cases of partial hysterectomies.

Certain writers have stressed the necessity for a complete hysterectomy in many cases in which the average surgeon does the supravaginal operation. The advocation of total hysterectomy by men like Polak is based solely upon these carcinomatous possibilities. I would not have you think that this is a remote possibility, for every once and a while we pick up an article in which there is mention made of the occurrence of carcinoma of the cervix following hysterectomy.

Masson,* writing on operative procedures and radiotherapy in myoma of uterus, states, "In the last five years, ten cases of carcinoma of the cervix have been observed at the Mayo Clinic from three to fifteen years after subtotal abdominal hysterectomy for benign lesions and nineteen cases, in which it was not possible to determine whether or not malignancy had existed prior to the early operation. He also says that in about the same number of cases the cervix has been removed for troublesome leukorrhea in such cases, in which subtotal hysterectomy had been performed previously."

In case total hysterectomy is not done, other methods of technic have been advocated, the simplest of which is coning out the cervical canal. If the cervix could be coned out thoroughly, all mucous membranes removed and the shell of cervix properly approximated, perhaps the end would be gained. If this is to be done, the vaginal surfaces should be prepared as in a total hysterectomy. Another method is to insert an ordinary cautery into the cervical canal. This is less desirable for the sloughing tissues are liable to become infected. If neither of these procedures is followed, radium may be inserted into the cervical stump at the time of operation or subseqently. This can be done only in those clinics or hospitals where radium is available.

While a few years ago Polak vigorously advocated total hysterectomy, he has recently modified his views. In a personal communication he says, "I have not changed my views relative to either removing the cervix at the time of hysterectomy or, if this procedure is too difficult, we can protect the woman from subsequent cancer by destruction of the entire gland bearing area with the actual cautery or by the introduction of radium. At present I am using the latter and doing fewer panhysterectomies."

In conclusion, cancer of the cervix follows supravaginal hysterectomies for benign conditions in two per cent of the cases. The earliest symptom is a variable amount of hemorrhage. This has as grave a significance as hemorrhage after the menopause. This two per cent can be made safe by a total hysterectomy and, if this is not possible, cauterization or irradiation is a feasible and efficient substitute.

IRRITATION DUE TO INSECT SECRETION. W. A. Hoffman, New York (Journal A. M. A., Jan. 15, 1927), discusses his experience with an insect which flew beneath his clothing and caused a burning sensation. Its cause proved to be a secretion exuded from two glands situated between the second and third pairs of legs. The insect was identified as Loxa flavicollis. Experiments were then made with specimens of this insect for the purpose of demonstrating an apparently new means of irritation by insects.

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* J. A. M. A., November 6, 1926.

VAGINAL ATRESIA*

REPORT OF THREE CASES

J. Tate Mason, M.D.
SEATTLE, WASH.

Congenital atresia of the vagina has been noticed and commented upon since the very earliest history of medicine. Engstad[1] says, "absence of the vagina occurs about once in every 5000 cases." He arrives at this conclusion from personal experience and not from any definite figures or statistics.

The deformity is due to failure of fusion of the Müllerian ducts and is accompanied by total absence of, or to a greater or lesser degree a deformity in the uterus and tubes. In the majority of cases reported the ovaries have been found normal. In two of the three cases which we report and which are of the usual type, the deformity was not discovered until after puberty, when absence of menstruation led to an investigation.

In the cases reported the external genitalia are usually normal. In our series of three cases the genitalia and particularly the labia minora were more developed than in a normal individual. The mental and physical characteristics were all feminine. The general development of body, the distribution of hair, facial features and as far as could be ascertained the sexual desire were normal. The discovery of the defect seemed to cause no mental depression, as has been reported in many cases.

The first attempt at forming an artificial vagina was made by Dupuytren[2] in 1817, another by Villaume[3] in 1823 and by Amussat[4] in 1832. All of these consisted in making an artificial opening between the rectum and the bladder, which closed within a very short time following operation and were complete failures. Hepner[5] in 1872 made such an opening and lined it with skin flaps from thigh and labia. This also failed.

The first partially successful operation for absence of the vagina was made by Gersuny[6] in 1897, in which a strip of mucous membrane from the anterior wall of the rectum was transplanted between the bladder and the remaining portion of the rectum. He reported three cases which were fairly satisfactory, except that the patients had to wear dilators continually to prevent vaginal narrowing.

Following Gersuny's attempt there were several sporadic efforts made to produce artificial vaginas. Tueguireff[7] in 1904 was probably the first to use a piece of gut from the entire rectum. Baldwin[8] in 1904 and 1907 deserves the credit of being the first to make a satisfactory vagina. About ten inches of the ileum were used, with the mesenteric attachment and blood supply intact. In a series of operations by the Baldwin method, the mortality was sixteen per cent. In our personal investigation we have found that the mortality ranged around fifty per cent.

In 1911 Schubert[9] devised another operation, in which the sigmoid was transplanted forward. The upper end of the sigmoid was detached and pulled down, and an anastamosis made between the distal and proximal ends. This lessened the mortality but because of the technical difficulties and the possibility of infection, which to some degree was always present, the operation has not been popular, in this country at least. Graves[10] in 1916 reports a plastic operation, by which a fairly satisfactory vagina was made by transplanting the labia minora from above downward, with the addition of two similar flaps from the inside of the thigh.

Our case of complete absence of vagina and two cases of atresia presented different problems. The manner in which we solved these and the method used is somewhat different from those described before. The results obtained were found to be satisfactory to the patients as well as ourselves.

Case 1. The patient was a well developed and robust individual. Her history was uneventful except for the fact that she had never menstruated. As is usual in cases of this type, the patient was unaware of her abnormal condition, and no relief was sought until the time when menstruation should have occurred. She was found to have complete absence of a vagina. She was examined under ether anesthesia, when it was found that tubes, ovaries and uterus were absent.

She was anxious to be married and to carry out her marital relations and naturally wanted her condition corrected. As she had no internal genitalia and was, therefore, unable to have children, we thought it would not be wise to do a Baldwin operation with its 16 per cent mortality, or the difficult and in some cases dangerous Schubert's operation. A plastic operation, similar to Graves', was performed, except that in this case only the labia minora were used.

An incision was made following the carina urethralis, by which the urethra was entirely freed from the tissue posterior to it. Incision was then made, starting just to the right of the clitoris and continuing down the right side of the urethra to the groove between the vestibule and the labia minora. This incision was continued posteriorly to the posterior commissure of the labia majora. The same was done on the left side, except that when the incision reached just posterior to the urethra, the incision of the left side was carried over the incision of the right side which had just been made (fig. 1). Starting at the line of incision the labia on both sides were lifted by carefully dissecting them from the tissue beneath, and were left attached at the lateral margins (fig. 2). Following the above procedure we had two flaps of nearly the same size except that the left one was a little larger as it contained the mucosa which had previously covered the orifice of the vagina.

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* Read before the Meeting of North Pacific Surgical Association, Vancouver, B. C., Dec. 10, 1926.

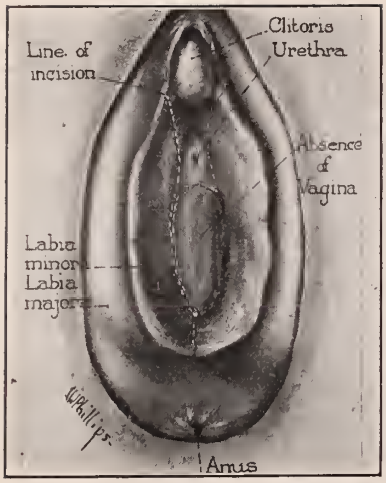

Fig. 1.

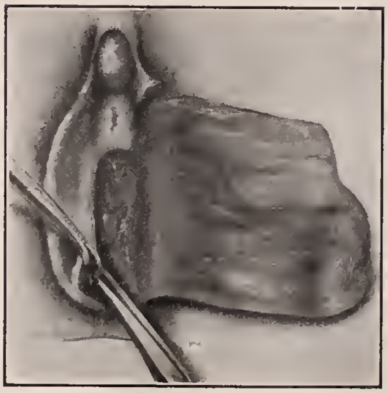

Fig. 2.

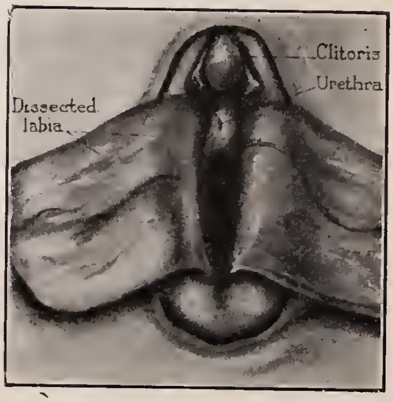

Fig. 3.

Fig. 1 (Case 1). Showing absence of vagina. Dotted line indicates line of incision.
Fig. 2. Left labium has been dissected and turned back. Dissection on the right side is being started.
Fig. 3. Dissection of both labia completed. Note vessel. Care has been taken to preserve the blood supply.

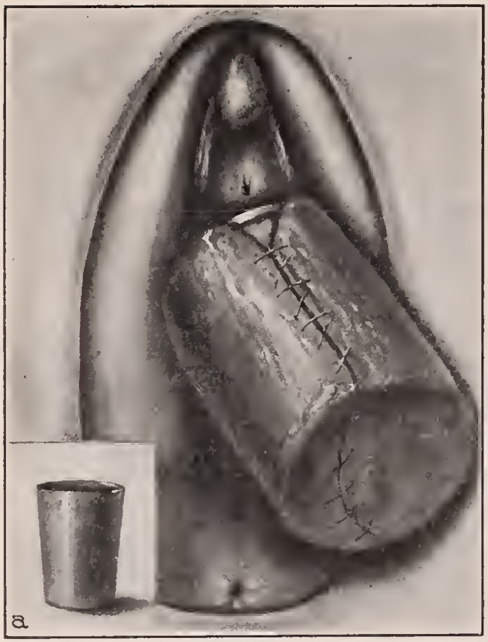

Fig. 4.

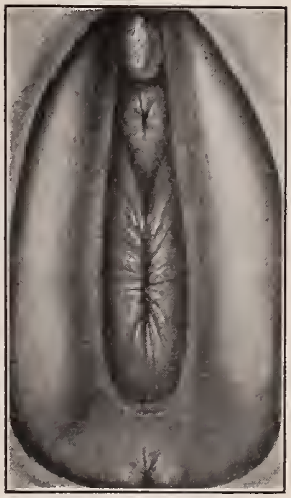

Fig. 5.

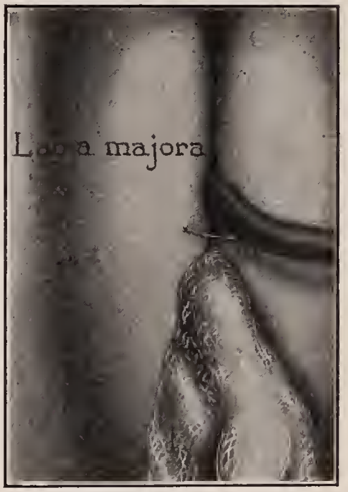

Fig. 6.

Fig. 4. Flaps have been sutured together over a silver cup. a.
Fig. 5. The everted vagina has been pushed into the cavity.
Fig. 6. Showing drain and vaseline gauze in place and operation completed.

Following the formation of the two flaps, the bladder and the rectum were separated by blunt dissection with a gauze-covered finger, until a cavity was made about eight centimeters in length and as roomy as the vagina of the average primipara. This was then packed with dry gauze.

The flaps were sutured together over a silver cup. The cup was slipped out and the packing removed from the artificial vaginal cavity. The everted vagina was pushed gently into the cavity. A small bivalve speculum was placed in the newly made vagina and the inverted flaps were sutured to the wall of the cavity by means of a few stitches which were placed as high as possible. The vagina was packed with vaseline gauze which was held in place with a T bandage (figs. 3-6).

Case 2. At the age of fourteen this patient suffered for four days with a considerable amount of pain in the lower abdomen, followed by sensations of pressure in the rectum. On rectal examination the family physician found a mass in the upper vagina about the size of a baseball. A diagnosis was made of imperforate hymen and under light anesthesia with one finger in the rectum, a stab wound was made into the mass which proved to be a blood clot. Since that time she has menstruated regularly with a good deal of pain and a sensation of fullness in the rectum and vagina with each period. At the age of twenty she was married and for two years was unable to carry on marital relations. A diagnosis of imperforate hymen was made.

Under ether anesthesia an attempt was made to sever this hymen, when the urethra was innadvertently opened and the sphincter severed. The patient returned home within a few days and we have reason to believe that from that time on copulation was carried on through the urethral opening into the

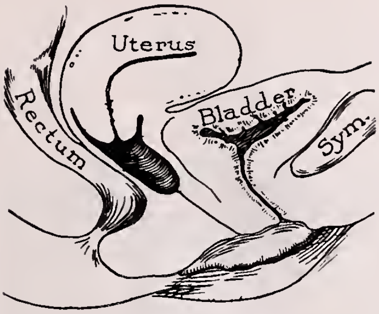

Fig. 7.

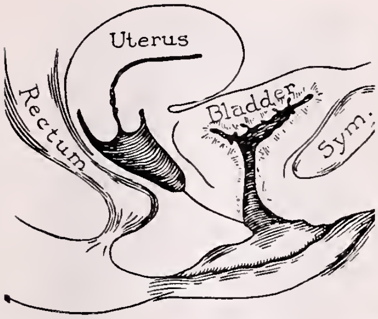

Fig. 8.

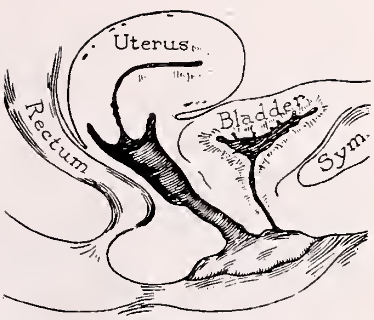

Fig. 12.

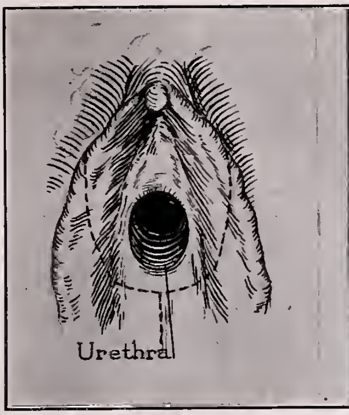

Fig. 9.

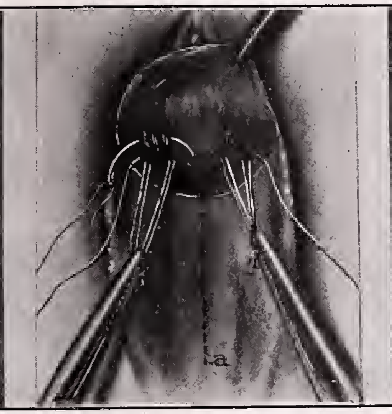

Fig. 10.

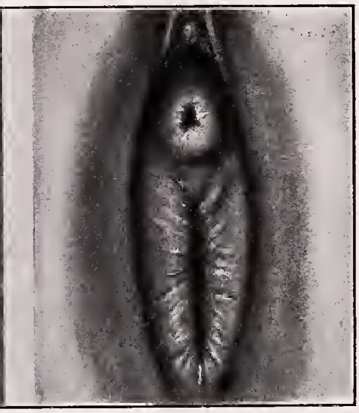

Fig. 11.

Fig. 7 (Case 2). Diagramatic section, showing general condition. Exceedingly small opening into dilated portion of vagina below.
Fig. 8. Showing condition after accidental tearing of the urethral sphincter muscle and opening into bladder.
Fig. 9. Dotted line indicates the incision made to repair sphincter urethral muscle.
Fig. 10. Exposure of the sphincter urethral muscle. a, line of incision for dissection into vagina.
Fig. 11. Showing the urethra repaired and newly made vagina.
Fig. 12. Diagramatic section, showing condition at completion of operation.

bladder. Urinary incontinence had been present for about eight months when we first saw her, necessitating the wearing of a large pad of absorbent cotton which became saturated with urine every few hours.

Her physical examination was negative, except for an abnormal condition of the vagina. She had never been ill. The vulva was apparently normal, the labia minora probably a little larger than usual. The opening into the vagina, pin hole in size, was a little to the left and anterior to the rectum. It seemed impossible that it would have been large enough for menstruation (figs. 7-8).

Some months before our examination some very excellent x-ray plates had been made, showing that a vagina was present and was at least three and one-half to four centimeters in length. It was now obvious that the vagina was absent in its lower third and there was complete rupture of the urethra sphincter. The labia minora were well developed and when split would easily reach the lower end of the vagina. The urethral sphincter had to be handled as in any rupture of the female urethra at the base of the bladder. With these abnormalities in mind a plastic operation was decided upon, using the labia minora in the same manner as in case number one.

A T-shaped incision was made, with the upper part of the T curving around the greatly dilated urethra. Through the lower arm of the T, blunt dissection with a piece of gauze over the forefinger was carried out until the lower end of the vagina was reached. The tissues were then separated until the entrance to the vagina above the opening would easily admit three fingers. The torn and relaxed structures at the neck of the bladder were sutured together by placing the forefinger of the left hand through the urethra into the bladder. This pushed down on the base of the bladder and posturethra until a good grasp could be made on both sides of the urethra. A catheter was placed in the bladder and held in position by tightly suturing the muscles around it with mattress stitches of linen. The labia minora on both sides were partly dissected from above downward. By blunt dissection the inner side was then separated from its outer side. These gave sufficient flaps without traction, to be attached to the lower end of the vagina. The newly made vagina was packed gently with vaseline gauze and the self-retaining catheter left in. One stitch was placed above the labia minora to hold the gauze firmly in place and also to separate the catheter from the gauze (figs. 9-12).

Case 3. This patient, age 55, had a traumatic vaginal atresia. Her general examination was essentially negative. She had been a rather healthy individual all her life. At thirty-five years she had a miscarriage, followed by pelvic trouble. At forty-five, following an automobile accident, she had pain and discomfort in the pelvis for several months. During the past year she has had bearing down sensations in the region of the bladder and felt that the uterus was protruding. There was frequent urination, especially after standing for any length of time.

Examination. The outward appearances of the vulva were normal. The vagina was not roomy, but with the slightest strain there was a considerable amount of rectocele and cystocele. The vagina was a blind pouch about five centimeters in length, the top of which almost protruded when the patient strained slightly. On rectal examination, with firm pressure over the lower abdomen a cervix could be outlined

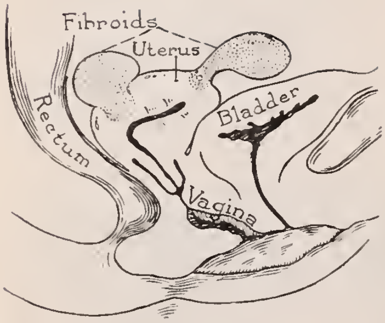

Fig. 13.

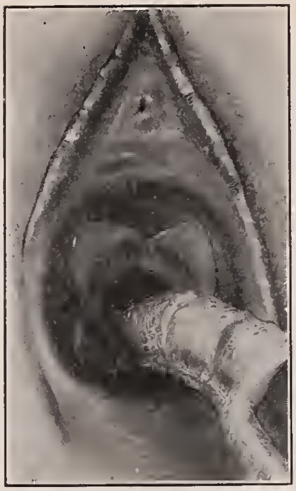

Fig. 14.

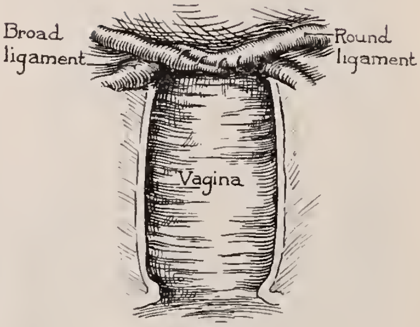

Fig. 15.

Fig. 13 (Case 3). Diagramatic section, showing condition found on first examination.
Fig. 14. Beginning operation, showing vaginal pouch cut in two directions, leaving four quarters.
Fig. 15. Diagramatic section, showing vagina attached to round ligaments, pulled together from side to side and overlapped.

at least two and one-half or three centimeters above the blind pouch of the vagina. This case represented one of those unusual conditions, in which the upper third of the vagina, from trauma or infection, had lost its mucous membrane and the raw or granulating surfaces over the upper extent of the whole circumference of the vaginal tube had grown together. Evidently during her period of menstrual life there was enough of an opening along the atresia to allow blood to escape (fig. 13).

Operation. The mucous membrane of the top of the vaginal pouch was cut in two directions, leaving four quarters (fig. 14). These sections were lifted and, with an assistant holding a hard metal catheter in the posterior wall of the bladder and one finger in the rectum, by blunt dissection the cervix was exposed. As it was pulled down, the body of the uterus could be examined and two fibroids, three by four centimeters, were found. A vaginal hysterectomy was performed. The round ligaments were then pulled together from side to side and overlapped as much as possible. When sutured together from the opposite sides, they furnished a fairly good sling for attachment of the upper end of the remaining vagina. The broad ligaments were then sutured in the midline and the upper end of the vagina attached to these structures. The result was a straightening of the vagina, a fair support to the bladder and no evidence of protrusion of the rectum or bladder when the patient strained (fig. 15).

Just as the uterus was being delivered through the vaginal route, the largest fibroid which was pedunculated dropped off and fell back into the pelvis. An abdominal incision was necessary for its removal. This gave us the opportunity of inspecting the wound from within. The broad ligaments were stretched across from side to side with as much tension and security as probably could have been produced from above. This patient made an uneventful recovery and has been completely relieved of her symptoms up to the present time.

RESULTS

Over six months have elapsed since the operations were performed. Case 1 has a vagina five centimeters deep and roomy enough to admit three fingers without discomfort. She has been married since and both she and her husband are satisfied with the condition.

Case 2 has a vagina resembling that of a primipara. There is still some incontinence of urine but not enough to cause her to wear a pad.

Case 3. The result in this was the straightening out of the vagina, making it five centimeters long. She has a fair support to the bladder and no evidence of protrusion of the rectum or bladder when she strains. Her symptoms of pressure and bearing down are relieved.

CONCLUSIONS

Each case presents a different problem. These patients are in a pitiful condition and certainly deserve all the thought, patience and consideration which can be given them.

Major operations, such as Baldwin's, Schubert's Beck's[11] and others of similar nature, should only be performed when specifically indicated, and then only with the patient's full knowledge of the liabilities.

Plastic operations, such as Graves', utilizing only the labia minora, are technically simple. They give practically no mortality and, if given some attention and care after the operation, make a vagina which is a fairly good substitute for the normal.

BIBLIOGRAPHY

1. Engstad: Journal Lancet, 1917, XXXVII, 329.

2, 3, 4, 5. According to Paunz: Zentralblat für Gyn. June 2, 1923, XLVII, 883.

6. Gersuny: Zentralblat für Gyn. 1897, No. 15.

7. Tueguireff: Zentralblat für Gyn. 1904, XXVIII, 772.

8. Baldwin: Ann. Surg. Sept., 1904.

9. Schubert: Zentralblat für Gyn. 1911, No. 28.

10. Graves: Gynecology, 1916, 567.

11. Beck: Bickham's Operative Surgery., Vol. VI, 176.

CEREBRAL TUMOR

REPORT OF CASES*

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ANGIOMA OF THE ARACHNOID WITH HEMORRHAGE

Miss C. H., age 15. Referred by Dr. Arthur Calhoun with the following history.

Patient had suffered from headaches for a long period of time and had had several attacks which were diagnosed by different physicians as hysterical seizures. In the interim she was treated for hysteria. About the latter part of December, 1925, she developed a left sided hemianopsia and on December 31 had had a seizure which left her paralyzed on the left side, with a Babinski on the left side, increase in her deep reflexes and apparently complete paralysis. In consultation with Dr. Calhoun it was decided that probably she had had a hemorrhage, involving the posterior portion of the right frontal lobe.

It was decided to send her to Minor hospital, where a spinal puncture was done. The fluid was found to be under 14 millimeters in the prone position and contained free blood. The eyes showed a double choked disc and a left sided hemianopsia. This confirmed the diagnosis of a hemorrhage. With free blood in the spinal fluid under the arachnoid and with a hemianopsia and choked disc, a basilar rather than a frontal hemorrhage was considered more probable. A hemorrhage into the right internal capsule could not be ruled out, however.

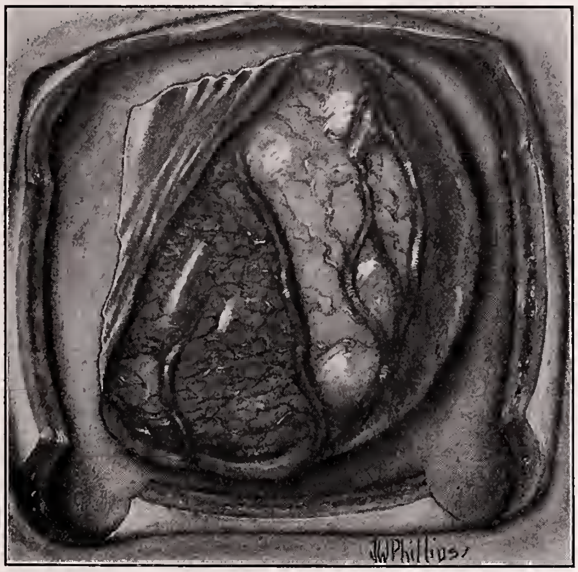

Fig. 1. Extensive angioma of the arachnoid. Large vessels behind and upon the central convolution. Precentral convolution entirely covered with network of vessels, small in calibre, that seem to course in the Rolandic fissure forward in the cortex itself. Puncture revealed an extensive subcortical hemorrhage.

She did not have the symptoms of a ventricular hemorrhage, either as to onset or rapid improvement. Mentally she was very clear, answered all questions promptly and, aside from the paralysis, hemianopsia and choked disc, did not show any symptoms of increased intracranial pressure. It was decided to observe her for a week. The hemianopsia cleared, but the eyes remained unchanged as also did the paralysis. At this time she developed some mental changes and it was decided that probably there was a large hematoma under the arachnoid in the frontoparietal region.

On January 7, 1926, under general anesthesia, a flap was turned down over the right preparietal area, about three inches in diameter. An elliptical incision made over the right parietal region. The skull was opened with four trephine openings, connected with the Gigli saw, the middle meningeal being ligated in three places. Bone was cut away over the lower side of the bony defect so as to expose what appeared to be a tumor mass low down. The dura was then opened and the brain bulged into the dural opening, two sides of the square only being opened. At this time 25 c.c. of 20 per cent salt solution were given intravenously to reduce the hernia. A needle was dropped through the cortex in the hope that the ventricle might be punctured. Directly under the cortex, however, a large mass was encountered, which proved to be a large hematoma. The bone was removed from the flap so that the periosteum could be left in contact with the arachnoid, the dura replaced as well as possible and the flap closed with interrupted linen sutures.

Findings: The line of demarcation between the anterior and posterior convolutions along the Rolandic fissure was very sharply outlined. The white cortex of the posterior convolution was demarcated from the reddish brown flattened anterior convolution, which was covered with many small vessels. A large angiomatous vessel coursed across the field from below upward and along the posterior margin of the postcentral convolution. A regular series of small vessels coursed forward as though arising from the fissure itself, very similar to endotheliomatous tissues. This mass could not be elevated, however, and was a part of the cortex (fig. 1). There was no attempt made to elevate the tumor mass, but x-ray therapy will be instituted.

Summary of Case. Since the patient has left the hospital she has been given deep x-ray therapy by Dr. Bourns at the Columbus Hospital. Gradually the paralysis disappeared, the eyes receded to normal and she has not had any more seizures.

The diagnosis in this case is angioma of the right arachnoid with subcortical hemorrhage. As you see, the left hand still shows inability to relax the muscles. This, however, is gradually improving. She can grip with her left hand, but cannot relax after the grip. Dr. Wyckoff has had her under treatment for the past year and has developed the motion in her leg by the use of splints and massage so that now she walks with only a slight physical defect. Her mental condition has always remained normal.

SUBARACHNOID CYST WITH CONVULSIVE SEIZURES

Convulsive seizures associated with subarachnoid cysts have been described by Dandy and others. Naffziger called attention to the formation of subarachnoid cysts following trauma, particularly associated with skull fractures. Large lakes of fluid under the arachnoid are commonly observed in operations on the cortex for epilepsy.

A boy, E. C., age 11, was brought to me by his mother on account of mental retardation. He was unable to talk without effort; did not seem to apply himself; was unable to concentrate on any particular subject and was suffering from repeated attacks of petit mal. A younger child, a girl, was mentally very bright and well developed physically. This patient had a fever and was jaundiced when a few days old. He recovered from this and at the age of seven had his skull fractured in an automobile accident. Since that time his mother states he has been very clumsy; not particularly irritable; has had repeated attacks of petit mal.

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* Read before a meeting of Seattle Surgical Society, Seattle, Wash., Dec. 17, 1926.

A ventricular study was done on July 29, 1926, at Providence hospital. This showed the air on the right side, but none in the left. The third ventricle was enormously dilated. On the left side the air went over the cortex, but did not enter the left ventricle. A diagnosis of angioma with cerebral atrophy of the left side was made.

The child was operated on August 3. Incision was made over the left parietal area and flap turned back. Four trephine openings were made in the skull and connected with the Gigli saw, flap turned down and the dura opened, revealing a blood-red cortex, due to minute extravasations of blood from the little capillaries of the pia and greater extravasations of the veins of the arachnoid. Convolutions were comparatively flat. Puncture was made to relieve the tension and the brain immediately began to pulsate. The chief large veins were one in front of and behind the motor Rolandic area and one in front of and behind the sensory area. The ones in front were more extensive. Going toward the midline there was a chronic pachymeningitis with a large and angiomatous vessel, running forward and upward. The dura was closed with interrupted linen sutures, a portion of the bone being left out to permit of deep x-ray therapy.

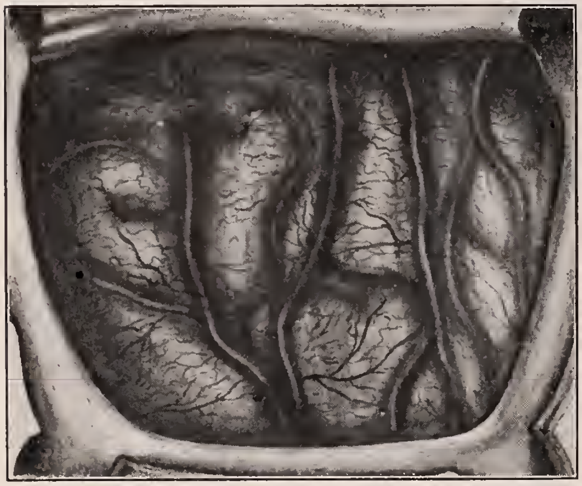
Fig. 2. Varcosities of the arachnoid. Hyperemia of the cortex and pial vessels.

The illustration (fig. 2) shows nicely the intense congestion of the cortex, the enormous dilatation of the arachnoid veins and the subarachnoid cyst over the Rolandic area. This cyst was punctured at time of operation.

X-ray therapy was given in this case six months after the operation. In the meantime the patient had improved mentally, but still continued to have his little spells. The radiotherapy was given in the hope that it would relieve the attacks. Sufficient time has not elapsed to report on the results from that angle.

This case shows what can be done in certain types of convulsive seizures. One must be extremely careful, however, in diagnosing these cases from the ventricular shadows. One must always consider, first, atrophy of the cerebrum, which allows a displacement toward the affected side with enlargement always of the ventricle on that side; second, angioma of the arachnoid, in which case the air will not enter on that side and there will be displacement of the opposite ventricle to the opposite side. We have made several blunders because of not carefully evaluating these two factors in making our studies.

SUBCORTICAL GLIOMA WITH HEMORRHAGE

On July 24, 1926, Mr. C. F. was referred to me by Dr. D. A. Nicholson. At that time he had been in the Swedish hospital for one week. The following history and examination had been recorded. Lead poisoning at age of twelve; neuritis in right hand four years ago with considerable swelling of hand that cleared up after teeth were extracted. Pneumonia nineteen years ago. Tonsillectomy. No accidents. Occupation, insurance. Four years ago and within the past month Wassermann negative. No history of urethral infection. Two or three months ago eyes were inflamed, probably due to an infection

Chief complaint: One month ago about 7 p. m., while feeling well (had been previously well for years), he suddenly lost consciousness. A few minutes before had noticed a stinging in his left hand and also a peculiar feeling in his left side. Wife states he was unconscious for an hour, became blue, no spasm or jerking of the muscles. Breathing was regular. Did not bite tongue, void nor defecate. When conscious complained of frontal headache, which centered around the right eye. The next day could not use his left hand for finer movements which has continued to date. No trouble with legs or below waist. Has a little stinging in left side of face; no vomiting. He complained of pain in right frontal region which increased for several days, then improved. He attended to his work for a few days and then headaches increased again, with severe pain in right eyeball and blurring of right vision.

Examination: Grip of left hand much weaker than right, slight atrophy of the hand muscles. He cannot approximate thumb and fingers of left hand. Reflexes of upper extremities normal, knee jerks normal, Achilles reflex normal. No Babinski or clonus. Hoover is slightly positive on left side; abdominals normal. Pulse is slow and regular. No ocular palsy, no nystagmus. Pupils are equal and react to light. Tongue protrudes in median line and to either side. Facial muscles normal. There is tenderness over right supraorbital nerve with slight herpes at this point.

When I saw the patient he was complaining of intense pain over the right frontal region, which we were unable to control with morphine. The eyes showed a double choked disc. There was a weakness of the left side, the left hand and leg. A left side Babinski was present. A diagnosis was made of a tumor of the left frontoparietal region.

Operation was performed July 26. Incision was outlined over the right frontoparietal region, elliptical in shape with a cross-bar in front, and carried on through to the periosteum. The flap was elevated from the periosteum and five trephine openings made in the skull and connected with the Gigli saw. The flap being turned down revealed a thickening of the dura over the parietal region with adhesions to the skull. The dura was opened and reflected downward, revealing an area, yellow in color, extending over three convolutions and the Rolandic fissure. A needle was dropped into the ventricle and no fluid found, then in the anterior tip of the frontal lobe and none found. It was then dropped directly inward and a little serum showed, yellow in color. It was decided to take out the bone flap and give x-ray therapy.

Findings: An area about two inches square, covering three convolutions, was yellow in color, containing a serous fluid, evidently the site of a glioma, infiltrating in character, extending from the cortex inward, involving the motor area, also some of the sensory areas. Into the yellowish area, above described, there evidently had been a hemorrhage, which had caused the first convulsion. The drawing shows very nicely the area over the site of the tumor (fig. 3).

This patient was given the lethal x-ray dose by Dr. Bourns at Columbus Hospital on August 1. The reaction was terrific after the first treatment. Subsequent treatments did not cause any reaction and he was sent home the following week. He has called at my office twice since that time, is about his business, has no headache and apparently the tumor has been at least arrested for the time being.

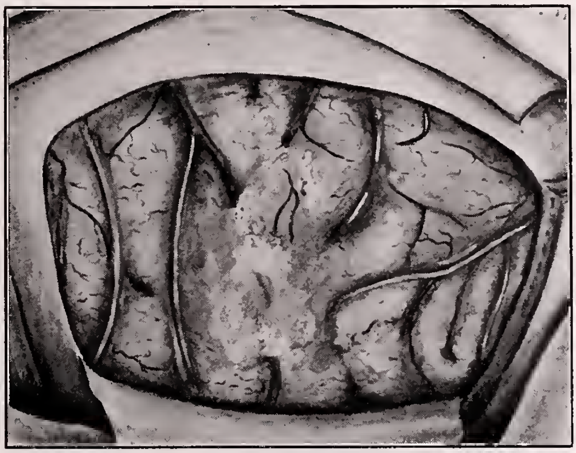

Fig. 3. Tumor underlying center area, size of pullet egg.

This case illustrates nicely a type of tumor which is not uncommon. The patient usually gives a history of headaches over a long period of time, associated either with tingling or some weakness of the muscles on one side of the body. Hemianopsias seem to be more or less constant, probably due to a general congestion on that side rather than to actual pressure on the optic tracts and radiations. This was true also of the little girl who had the angioma with hemorrhage. Hemorrhage in the postfrontal region seems to cause a hemianopsia. Why it should do so, unless due to indirect pressure, one cannot conjecture. These cases eventually suffer a sudden collapse. Practically all physicians will make the same mistake in diagnosis because there is nothing in the eyes, in the reflexes or in the mental condition to suggest a lesion except the subjective symptom, headache.

In this case a weakness followed a seizure but came on suddenly. There is usually a hemorrhage into the glioma and this may or may not be found at time of operation. The appearance of the cortex is beautifully shown in the two drawings, both showing the yellow discoloration of the cortex. Palpation reveals a soft, spongy area. Sections of brain removed will show many gliomatous patches, thus making it practically impossible to remove the entire masses.

X-ray therapy seems to offer the best results. In quite a series of cases the only benefit we have obtained has been by radiotherapy. We usually take out a rather large piece of bone for two reasons: first, to allow for the swelling that takes place following the lethal dose and, second, to permit of greater penetration. Dr. Bourns has found that a fifteen to twenty-five minute exposure at the first treatment will relieve the patient more completely than several smaller periods extended over a longer time. We agree with him in that respect. Radiologists do not agree, however, that there is more penetration through the soft parts than through the bone, but our observation is that one obtains far better results through a large bone defect.

CEREBELLAR CYST

Mrs. R. O. S. was referred to me by Drs. Blackford and Palmer of the Virginia Mason Clinic on September 22, 1926, with the following history: Age 52. For the past few years has not been sure of herself, particularly when crossing a street or in a crowd. About Oct. 1, 1925, began having severe headaches, which have persisted and gradually increased in severity until now she has severe pain in the top of the head and over the right occipital region. In June, 1926, she felt that her condition might be due to her eyes and consulted an oculist, but glasses did not relieve her headaches. She has not had blind spells, either transient or permanent, but has noticed diplopia. This symptom developed two months ago, transient in character. Seven weeks ago had her teeth out and since then has noticed a numbness of the right face and mouth. Has not had disturbance of taste, smell or hearing; no ringing in the ears (tinnitus). Yawning has been a symptom for some months, so much so that her friends have spoken of it to her. She has hiccoughed after meals for the past year. Has not vomited except when she has weak spells, after which she has projectile vomiting. These spells have occurred about twelve times during the past year. She is not unconscious with them, but has fallen a few times. She walks in a circle around to the right, this perhaps being what she terms confusion in crossing the street. She has had no paralysis of single or group muscles. No sensory disturbance except for a burning sensation on the sole of the left foot, which has annoyed her extremely at times. Her headache seems worse on changing from the upright to the prone position or on turning from one side of the bed to the other.

Examination on the above date revealed the following conditions present: Mentality clear. Eyes: A lateral nystagmus to the right and to the left of a rotary character; pupils wide, slow to react. The discs show a marked papillitis of the right with hemorrhages of the left a moderate degree. No diplopia at the present time that can be elicited, either objective or subjective. When she smiles she seems to favor the right side of her face; the tongue protrudes slightly to the right. There is no pastpointing either with the hands or feet, no rigidity of the neck or Kernig, no weakness of the grip of the hands or the extension of the feet. No pathologic reflexes were elicited. Motor pathways are all intact and no sensory disturbance of heat and cold and vibratory sensations. Localizations all normal.

Positive neurologic findings: (1) Optic nerves—edema, (2) nystagmus.

Spinal puncture was done in the prone position with the head flexed slightly forward and the body tilted slightly forward so as not to allow sudden release of high pressure. Pressure 10 millimeters; 5 c.c. removed, after which the pressure dropped to 2. A very fine needle was used.

Summary. The history of this patient, with gradually increasing symptoms, with the presence of beginning choked disc and a pressure of 10 in the prone position (normal 4), would suggest the possibility of a cyst of the cerebellum. The absence of tinnitus, deafness and pastpointing would eliminate an acoustic nerve tumor. The probabilities are that we have to deal with a cyst of the cerebellum. An edema of the cerebellar fossa due to luminal is hardly probable, but must be considered.

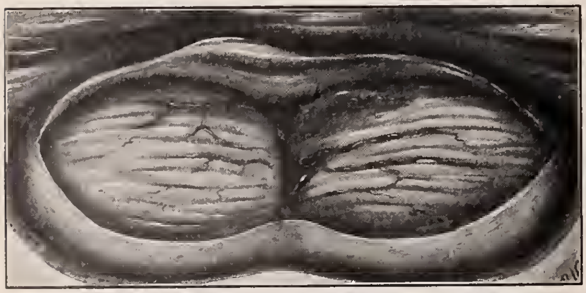

Fig. 4. Cyst of cerebellum, left side.

Operation: The operation was done in two stages. The first consisted of making the usual cerebellar approach with the cross-bow incision, exposing the occipital bone, with removal of the bone overlying the cerebellar fossa. The dura was not opened at this stage because of collapse of the patient at this time, but the ventricle was opened through a trephine opening above the transverse line and 30 c.c. of spinal fluid withdrawn.

At the second operation, November 18, the dura was opened, exposing a cerebellar cyst, as shown in the drawing, at the lower segment of the left inner pole of the cerebellum (fig. 4). This was opened and drained and then palpated for an underlying tumor, but none was found. The hernia of the cerebellum receded and the normal pulsation was restored. The dura was closed and then the skin. The patient stood the operation very well and made an uneventful recovery. Here eyes receded promptly, the nystagmus disappeared within the week. The headaches disappeared almost immediately following the operation. She had been compelled to use morphine for many years and did not have any following the operation. A letter from her husband December 26, states that the patient is sitting up, is free from headache and gaining in strength daily.

Cerebellar cysts are not infrequent and are easily diagnosed and cured. They are frequently found in children and usually are associated with gliomas or tubercles of the cerebellum. We have had during the past year three such cases, all in children. The cysts were diagnosed and operated on only to find large inoperable tumors immediately below. These children all died and autopsy revealed the tumor masses, removal of which would have been fatal in each instance. In adults the prognosis is very good; in children the prognosis is very bad.

COMPRESSION FRACTURE OF SPINE WITH CORD SYMPTOMS

RECOVERY AFTER LAMINECTOMY

William C. Speidel, M.D.
AND
Amos Fey, M.D.
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CASE REPORT

C. A., at 2:30 p. m. August 6, 1926, fell from a staging a distance of eighteen feet. He landed on some planks in a sitting posture. He says he did not have a great deal of pain, but immediately was unable to move the lower half of his body or feel anything in this region. He lay on the ground for a few minutes, thinking perhaps these symptoms would pass away. He was removed to Columbus hospital His condition remained unchanged the next day. He was unable to urinate.

Physical Examination. Loss of voluntary motion in the lower extremities, with only a slight movement present in the hips. Deep reflexes were absent.

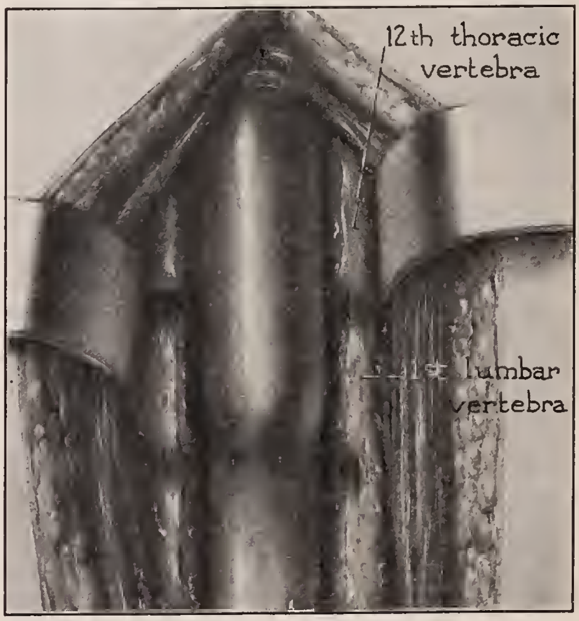

Fig. 1. Appearance of dura and construction after laminae were removed.

Sensation to pin prick was absent in the lower half of the legs. There was a slight gibbus at the level of the twelfth dorsal vertebrae. Radiographs showed a compression fracture of the first lumbar vertebrae.

Operation was decided upon, and under ether anesthesia the spinous processes and laminae of the twelfth dorsal, first, second and third lumbar vertebrae were removed. The dura was ballooned and tense. The twelfth dorsal lamina was first removed and, as the covering of the spinal canal was lifted, compression was noted at the level of the second lumbar vertebrae (fig. 1). The cord was pressed against the walls of the spinal canal so that there was a constriction above which the dura was tense (fig. 2). The roof of the constricted area was removed. The dura was opened, permitted a free flow of spinal fluid. No gross lesion could be noted on inspection of the cauda equina beneath the point of constriction. The dura was closed with fine catgut and the wound without drainage.

Postoporative course was uneventful. The patient was given sedatives as required and hexylresorcinol as a urinary antiseptic. Two weeks later he noticed a beginning return of voluntary motion. Sixteen days after the operation he voided naturally.

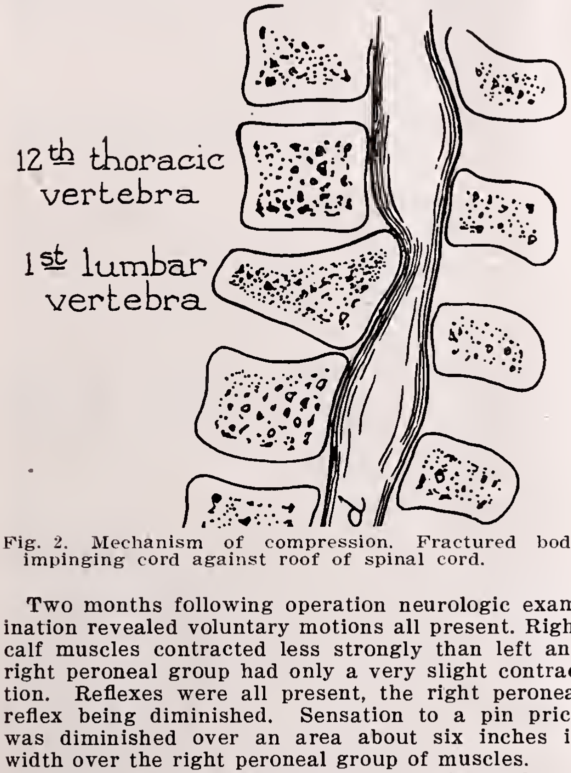

Fig. 2. Mechanism of compression. Fractured body impinging cord against roof of spinal cord.

Two months following operation neurologic examination revealed voluntary motions all present. Right calf muscles contracted less strongly than left and right peroneal group had only a very slight contraction. Reflexes were all present, the right peroneal reflex being diminished. Sensation to a pin prick was diminished over an area about six inches in width over the right peroneal group of muscles.

A Taylor brace was applied and patient allowed up. He gradually regained the power to walk until, four months after the operation, he was able to come to the office unaided except for the use of a cane. As all his movements are present we anticipate a complete restoration of power in his legs. He states that he has no symptoms referred to his back and wears the brace simply as a prophylaxis against injury.

COMMENTS

Mechanism. Compression fractures are most often due to force transmitted along the longitudinal axis of the spine, the fracture occurring usually in the lower thoracic and lumbar regions, possibly because of slight anterior flexion of the vertebral bodies.

Mortality and morbidity. Frazier says that there are many instances of recovery of function after clinical evidence of complete transverse lesion, following cord injury. Operation should be performed at the earliest possible moment. The following table taken from Frazier supports his plea for early operation:

717 case with cord symptoms.

Died, 442; 61.6 per cent; 28.1 per cent operated upon. 33.5 per cent unoperated.

77 recoveries, 10 per cent; 9.5 per cent operated on. 1.3 per cent unoperated.

Improved. 14.1 per cent with operation; 3.2 per cent without operation.

Unimproved, 65 cases—9 per cent with operation; 9 cases—1.3 per cent without operation.

302 unoperated cases. 90 per cent died; 2 per cent recovered; 7 per cent improved; 1 per cent unimproved.

405 operated cases. 42 per cent died; 17 per cent recovered; 25 per cent improved; 16 per cent unimproved.

This case is reported not because of the rarity of the lesion but because it illustrates the satisfactory result that is occasionally obtained in the presence of a poor prognosis. As shown in the above table, 90 per cent of fractures of the spine with cord symptoms die, if not operated upon. Bed sores, urinary sepsis and death are the usual result. Prognosis is much better after an early operation. Even though the paralysis is complete, actual inspection of the injured cord is the only proof of an irreparable lesion. Compression only may have occurred and the cord recover after this is relieved.

FRACTURED FEMUR IN CHILD

REPORT OF A CASE

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SEATTLE, WASH.

The subject of open operation for fracture of the femur in children is worthy of careful consideration. Where there is good position, there is no debate. Where there is good alignment, no shortening and one-half to one-quarter approximation, the conservative surgeon will not interfere.

Where there is good alignment, very slight shortening and no approximation of the fractured ends but side to side approximation, after all efforts at a more perfect reduction have failed, the surgeon who has hospital facilities available will often feel he should operate. In view of injury to soft tissues, undesirability of foreign bodies in the bone, the frequent infeasibility of bone graft and danger of infection, it will pay to consider the end-results in a few cases which have not had open operation. The following case is illustrative.

Geo. E. (Children's Orthopedic Hospital No. 4950), age 3, fell August 4, 1926, and had a transverse fracture of the right femur at the junction of the upper and middle thirds. During the half hour while being taken to the hospital, forcible manual traction was maintained, hip and knee being flexed at 90 degrees. The fracture which was in bad position when we started was in good position on arriving at the hospital.

A radiogram showed only slight anterior displacement of the upper fragment. The position was good enough to leave alone. While applying a Bradford frame, extension and Thomas splint in correct position of flexion, the fragments slipped entirely out of position. Weights and more flexion were applied without success. Possibly calipers should have been applied but a cast was used with extreme manual traction under a general anesthetic. This produced improvement but not a perfect correction. Two days later the cast was removed, Buck's extension applied to the lower two-thirds of the thigh, ether was given in the x-ray room and assistants employed manual traction on the leg and on the Buck's extension while a cast was replaced.

X-ray pictures showed the alignment was good and the anteroposterior position perfect. The lateral view showed one-quarter approximation and the fragments were considered in satisfactory position. After the cast was finished on August 9, another x-ray picture showed perfect anteroposterior position and good alignment but the lateral view showed an anterior displacement of the upper fragment, the width of the bone (fig. 1) with very slight overriding, possibly one-eighth inch. It was decided to leave the cast on and not interfere unless the fracture failed to unite. The boy was taken home wearing the cast.

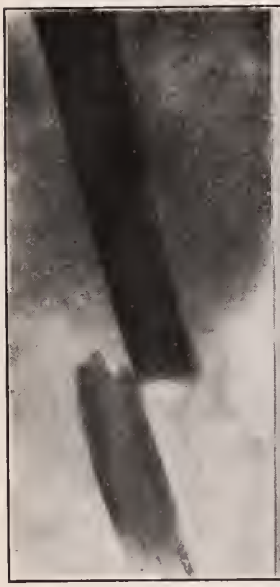

Fig. 1.

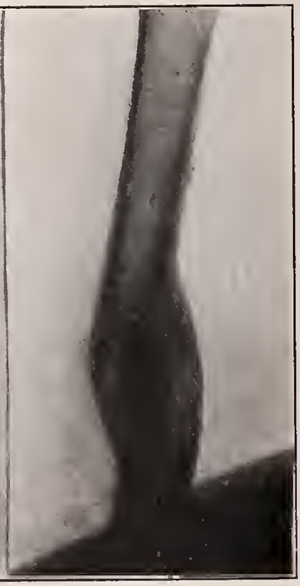

Fig. 2.

The cast was taken off at the end of eight weeks and the thigh and leg massaged. The boy was allowed free movement in bed for a few days and in about ten days allowed to walk. In November he could walk and run apparently with no difficulty, though his mother thought she could detect a limp.

Figure 2 shows the x-ray picture taken on December 6. The callus has already become firm bone. There are those who think the femur at the point of deformity is stronger than at any other point. This patient has a perfect functional result. Would open reduction have been better?

Reports on a few other Orthopedic Hospital cases may be instructive.

A boy, age 7, No. 4674, admitted February 27, 1926, had an oblique fracture of the right femur at the juncture of the upper and middle thirds. Good position and alignment were obtained by Thomas splint and Buck's extension. Later on overriding was overcorrected by calipers which were applied March 1. The boy was restless and on March 27 a cast was applied, which was removed May 6. There was one-half inch shortening. On May 27 he was discharged. Function good.

A boy, age 8, No. 4613, was admitted January 12, 1926, with fracture of the femur at the middle third. There was no overriding, no shortening, and the alignment was good, but the distal fragment was displaced inward and backward the width of the bone. He was discharged March 24 with good function.

Patient, age 7, No. 4786, was admitted April 26, 1926, with an oblique fracture at the juncture of the upper and middle thirds of the left femur. On May 3 an x-ray picture showed overriding with backward displacement of the lower fragment. On May 6, under ether, calipers and a cast were applied. On May 8 the overriding was found corrected with half approximation. On July 5 the cast was removed. No shortening or deformity, good function.

A boy, age 2, No. 4806, was admitted May 10, 1926, with an oblique fracture below the left hip. Pelvis was also fractured. Overhead extension and Thomas splint. June 5 cast, July 20 cast removed, function good.

A boy, age 6, No. 4841, was admitted June 3, 1926, with an oblique fracture at the middle of the left femur with an extra overlapping fragment. Reduction was made under ether and traction applied. An x-ray picture showed alignment good, no overriding. August 1, discharged, result excellent.

A boy, age 5, No. 4877, was admitted June 16, 1926, with a fracture at the middle of the left femur. Anteroposterior view shows good position. Lateral view shows half to one inch overriding. Corrected by extension. On July 23 discharged, wearing a cast. September 7, function good. November 30 no shortening, good result.

A boy, age 9, No. 4620, came to the hospital January 13, 1926, with a fracture at the middle of the right femur. Extension was applied but on January 22 x-ray pictures disclosed overriding of one inch. Calipers and traction were applied which by February 1 produced a separation that was corrected by diminishing the weights. An anteroposterior view showed one-quarter approximation, laterally one-half approximation. The functional result was good.

A child, age 4, No. 4764, was admitted April 8, 1926, with a fracture at the middle of the right femur and right tibia. There was some overriding of the femur but no open operation was done. Discharged May 28. The ultimate result was excellent. No shortening.

The above cases taken from the records of the Children's Orthopedic Hospital in Seattle, are all the fractured femurs which were admitted between January 1 and December 1, 1926, that had some overriding or some deviation from perfect position, and which were not operated upon. There was only one open operation on a femur reported and that was a case of ununited fracture which was plated and had a good result. One open operation on a fractured femur was done in December but it is too early to report final results.

The purpose of the reporting of these cases is to show the excellent final outcome in fractured femurs in children, where there is some uncorrected overriding or other deviation from perfect position. A report about a year ago on a large series of cases in the Cook County Hospital, Chicago, shows good final results in similar cases, and children who had over an inch of shortening upon discharge showed no shortening two years later.

Scudder in the latest edition of his book on fractures, gives further grounds for optimism in such cases and shows that an overriding, if in good alignment, need not cause anxiety. He says that such cases have firm union, perfect function and in the course of time shortening is compensated for by an apparent extrastimulation of the centers of growth on the affected side, so that ultimately the two femurs are actually the same length.

REDUCTION OF FRACTURES

A USEFUL OPEN METHOD

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Every surgeon who handles very many fractures is occasionally called upon to reduce one by the open method, this, of course, after all the prescribed closed procedures have been of no avail. When he is faced with this problem, he knows from his own experience and that of others that it is not in any degree a trivial matter. Naturally, then, he is anxious to learn of ways to simplify the task.

The following method is described because the author has found it a great help and believes that others may benefit by it also. It was first described by Enloe of Chico, California, and since seeing his description, the writer has made use of it a number of times, in each instance with great satisfaction, complete union and healing by first intention.

The application of a plaster cast after a fracture has been reduced by the open method is perhaps practiced universally, as it assures immobility, and in most cases maintenance of position. But the application of this casing after one has reduced the fracture, whether he has used a graft, an inlay, pegs, bands, plates, wires or what not, is an anxious procedure, about which hovers the possibility of displacing the fragments or weakening the retaining or connecting apparatus. Considering the frequency with which the cast is used, it seems rather remarkable that the application of a cast prior to operation has not been more frequently employed. Such a plan has many advantages and no disadvantages that the writer has been able to discover, provided the task is properly planned with observation of all necessary details. The principles of it are simple, applicable to fractures of any of the long bones.

The member to be operated upon has first been subjected to extension by any of the modern methods until all or most of the overriding or shortening has been eliminated. Still maintaining this extension, the part is put in a plaster cast, immobilizing firmly the joints above and below. For instance, if it is a femur, immobilizing the entire leg and body. During the application of the cast flat pieces of steel are incorporated in it to obviate the possibility of a weakness occurring after the operative window has been cut. When the cast is completed, a window is cut sufficiently large over the area to be operated upon to allow adequate space for incision. This rectangular window is removed entirely, but replaced and held by adhesive. The operation can be done as soon as the cast hardens and the check-up x-ray pictures are taken, or delayed a week or ten days.

The preparation for the operation is simple, requiring only the removal of the window and the cotton outlined by the rectangular space, then shaving, cleaning and drying the skin. The skin can be treated with either mercurochrome or weak iodine; then be covered by sterile dressings and the window replaced until after the patient is anesthetized. Then the window is removed but saved, the dressings removed and the skin again painted with iodine or mercurochrome. Four sheets of sterile rubber dam, cut the proper width, are inserted under the window edges and allowed to overlap onto the cast. Sterile towels are then placed on top of the rubber dam. These are pinched to the skin with towel clips. There is now a sterile field to work through, the rubber dam protecting the cast from the softening influence of moisture.

The bone ends are exposed in the usual way and by means of a bone jack or elevator they are brought end on, where they remain. If they have been slipping off in one definite direction, the correction should be overdone in the other. Now the operation is completed. No apparatus is necessary for holding the bones where they have been placed. No further manipulation is to be feared because the cast is on. You merely have to suture and put back the window.

This procedure lends itself very beautifully to the open reduction of both bones of the forearm, the only difference being that two small incisions are required, one over each bone, but after one of them has been placed end on, the rigidity of the forearm, caused by the cast, maintains its position while the other one is being reduced.

The writer has used this method for open reduction of the femur, humerus, tibia and fibula, ulna and radius, obtaining in every case bony union in normal time, with no infection and good function.

The advantages offered by this procedure are: First, improved technic, in that there is no slipping or moving of towels, no strenuous tugging, no pulling in order to gain reduction; second, the tissues are not further damaged by manipulation necessary to reduction, inasmuch as the member is not angulated in order to get the ends on; third, no foreign material, graft or inlay is required for the bones, once placed end on, are held there by the muscle pull and the fixation produced by the cast; fourth, the time of operation is greatly reduced. The author has never spent more than forty-five minutes operating upon a femur. Fifth, there is no danger of destroying the result of the operation by applying a cast after it.

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PYRETIC TREATMENT OF CHRONIC ARTHRITIS*

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In this paper I will discuss the etiology and treatment of the most common forms of chronic arthritis. These are the so-called atrophic and hypertrophic types of arthritis deformans. In the roentgenograms these show a decrease in bone structure or an increased bone production about the affected joints. There is a third type which shows no x-ray changes which may be an early stage of the above mentioned forms. Still's disease and gout will be mentioned as allied conditions. I will not include the tuberculous, syphilitic, purulent and neuropathic forms.

The etiology of arthritis deformans is not definitely known, but numerous theories have been advanced. Until recently all of these cases were thought to be due to focal infections, the bacteria or their toxins being transferred to the affected joints through the blood stream. Other theories are trauma, faulty metabolism and intestinal protozoa, the last suggested by Dr. Harry Wyckoff of Stanford University. Dr. Percy Wilde of England claims that these patients show a disturbed body chemistry which causes lactic acid deposits in the subcutaneous spaces and about the affected joints.

There are numerous other theories, but the most acceptable and workable one at present has recently been advanced by Magnuson of Chicago. He divides them etiologically into the infectious and noninfectious types. The cases of the infectious type give a history of pain, relieved by rest and aggravated by exercise. The noninfectious cases have a feeling of soreness and stiffness in the morning or after sitting. After walking a short distance they "limber up" and feel better. This is the type which frequently shows a disturbed body chemistry with an increase in the uric acid and nonprotein nitrogen of the blood.

In the cases where it seems possible that some infection is present, the search for its source should be made in a systematic manner. Practically the only places where bacteria may enter the body are where the mucous membranes come in contact with the exterior. This means the nose, throat, ears, intestinal and urinary tracts with their ramifications. Each system should be investigated separately and examined by all of the methods available. Occasionally cases are found which from the history suggest a combination of the two types. These probably are primarily infectious cases which have developed an associated disturbed chemistry.

Smith of Los Angeles has found a number of cases with a congenital fixation of the terminal ileum. As a result of this the cecum does not function and probably is the source of toxemia. He claims a number of patients have experienced complete relief from arthritic symptoms after resection of the cecum. This method should be attempted only in carefully selected cases, as the operative mortality is exceptionally high.

Forbes states that we cannot hope to improve our methods of treatment until we can isolate the infectious agent or at least identify it. Recent investigators, by skin reactions and complement fixation tests, feel that they have demonstrated susceptibility to special strains of streptococci and other bacteria.

After reviewing the literature and noting the various etiologic suggestions, it is not difficult to understand why there is no standardized form of treatment for this condition. If it were possible in every case to isolate and remove some definite source of infection, there is no doubt that results would be much more satisfactory. Everyone who has treated these cases has found that the percentage in which this can be accomplished is very small.

While these methods of investigation are being improved, there are hundreds of these unfortunate individuals who are seeking relief from this painful and crippling malady. Wtih this in mind I am outlining a treatment which, except in a small number, gives very gratifying results. There are two main principles involved in this treatment; first, to limit all poisons entering the body; and, second, to increase elimination. All possible sources of infection are removed and the diet is arranged so that as few toxic elements as possible are introduced in this way.

Elimination is improved through four main channels: (1) Through the lungs by posture and deep breathing; (2) through the kidneys by increasing the intake of fluids and diuretics; (3) through the bowels, not being satisfied with the statement that the bowels move every day but being certain that the intestinal tract is being sufficiently evacuated so that there will be no absorption of toxins from this source; (4) through the sweat glands. The last is best accomplished by daily low pressure steam sweats, given in a cabinet where the temperature can be accurately controlled so there will be maximum elimination with minimum depletion of the patient.

This is the so-called "pyretic treatment," as described by Wilde and used with excellent success by Goldthwaite and others. During the last three years we have treated seventy-eight cases and of this number all but six admitted definite relief following treatment.

The patients who are to be benefited by this treatment will notice a diminution of pain early, sometimes after one or two baths and practically always during the first week. If there is no definite improvement at the end of the first week, other forms of treatment are added, such as intravenous sodium iodide, serums, vaccines, foreign proteins and the various types of physiotherapy. In some of the more stubborn cases it is sometimes necessary to resort to casts, braces or operative procedures before relief is obtained. In some of the patients the relief is only temporary but ordinarily, if they can be kept under close supervision, they can be kept symptom-free with no progress of the disease over long periods of time.

I have selected a few of the especially striking cases to show how remarkable is the relief under favorable conditions.

Case 1. R. H., age 38, developed an arthritis of the lumbar spine about 1918 while in the army, On being discharged from the service, he was unable to resume his practice of law on account of this disability, so reported to the Veterans' Bureau for treatment. He had a long course of physiotherapy, consisting of deep therapy lamp, ultraviolet ray, diathermy and electric cabinet sweats. As he received only slight relief he was hospitalized for hot packs, followed by a body cast.

In March, 1924, he reported for the pyretic treatment, wearing a brace and walking with crutches. After three treatments he was able to discard his crutches and found his brace was not needed after the first week. The third week he was in court four davs without the slightest discomfort.

2. J. R., age 70, came to my office May 1, 1924, walking with difficulty with the aid of two canes. On examination he showed an extreme hypertrophic arthritis, involving both knees with an advanced calcification of the arteries appearing in the radiograph. His blood pressure was 240-104 and the urine showed a definite albumin reaction. After daily baths for one week he was practically free from pain, the blood pressure had dropped to 172-100 and the albumin had disappeared from the urine. After three weeks he was able to take care of his garden and perform other duties which he had been unable to do for several years.

3. Mrs. C. T. F., age 27, reported for treatment on June 9, 1924. For about two months previously she had been suffering from pain and swelling involving most of the larger joints. This was classified as a subacute general arthritis, showing no x-ray changes. After five treatments she was completely relieved

NAME, MRS. J. N. N. DIAGNOSIS—HYPERTROPHIC ARTHRITIS BOTH KNEES AUGUST-SEPTEMBER, 1926

	FIRST WEEK—AUGUST						SECOND WEEK—SEPTEMBER					
	Mon. 24	Tues. 25	Wed. 26	Thur. 27	Fri. 28	Sat. 29	Mon. 30	Tues.	Wed. 1	Thur.	Fri. 3	Sat. 11
Temperature—												
Before treatment	97.8	97.2	97.4	97.2	97 4	97 2	97.2		97.2		97.3	97.2
During treatment	100.2	99	99	99.4	99.4	99.4	99.4		99		100.6	99.8
After treatment	98.2	98 4	97.8	97.8	98	97.2	98		97.4		97.4	98
Pulse—												
Before treatment	80	76	76	74	78	80	72		80		96	68
During treatment	116	98	100	100	100	100	95		104		102	100
After treatment	72	68	64	62	70	68	68		68		66	68
Time until sweat—minutes	20	25	30	25	25	20	25		30		30	30
Reaction of skin—acid	+	+	+ +	0	+	+	+		+		0	
Reaction of urine—acid		34°							6°			
Weight		160									164	
Joint symptoms	+++	+++	+++	++	++	++			+		+	—

and was symptom-free until October of the same year, when she experiencd a slight return of her old trouble. Two treatments gave relief and she was cautioned about closer supervision of her activities at that time.

4. T. F., age 56, reported June 1, 1926, with the following history. Yesterday while driving off the tee at the golf course he experienced a kink in the lower back. Ten years ago he had a similar attack while stooping to pick up some object. He has had a number of attacks like lumbago since that time. His ocupation is that of shingle mill broker which necessitates considerable riding over rough roads in an automobile. This has caused him so much discomfort that he has been forced to give up his work during the last year.

The x-rays showed spurs and lipping of the sacroiliac joints and the lumbar spine typical of an hypertrophic arthritis. His treatment consisted of thirteen baths, extending over four weeks time with complete relief. When he reported to my office a few weeks ago, he had just returned from an automobile trip to California, covering over two thousand miles. He stated that he experienced no discomfort from his back during the entire trip.

In addition to the profuse elimination through the sweat glands it is probable that there is some general systemic reaction at the time of these baths. The accompanying chart is copied from a patient's record and these findings rather substantiate this belief. The changes shown on this chart are practically the same in each case, that is, the rise in temperature, increased pulse rate, long interval until the sweat appears and acid reaction of the skin.

These patients frequently run a subnormal temperature and appear generally below par. In this type we do everything possible in the way of tonics, sun baths, massage and other means to restore them to normal, believing that this may be one of the factors delaying recovery.

It is rather generally known that there is no one treatment which will relieve every case. With a number of forms of treatment at our disposal, we attempt to outline a suitable course for each patient and carry it through until relief is obtained. The pyretic treatment is used in conjunction with any other form of therapy deemed advisable, but at present is the one most reliable means at our disposal for rapid relief of these cases.

929 Medical and Dental Building.

Leukoplakia of Bladder. Russel A. Hennessey, Memphis, Tenn. (Journal A. M. A., Jan. 15, 1927), reports one case and analyzes seventy-nine cases already recorded. In his case, the vesical leukoplakia was associated with an unusual chronic inflammatory process (possibly preleukoplakic) involving both kidney pelves; hence Hennessey believes with others that chronic inflammations, irritations and calculi are important factors in the production of leukoplakia. Leukoplakia involving the urinary organs is most commonly found in the bladder. The lesion is more commonly found in the male in the ratio of approximately 3 to 1. Pathologic observations indicate a precancerous tendency in the area involved by the leukoplakia. Treatment has been variable and uncertain. Fulguration of vesical lesions is thought to be beneficial.

COCCIDIOIDAL GRANULOMA[*]

Walter Kelton, M.D., F.A.C.S.
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Sixty-two cases only of this grave disease have been reported in the literature. For this reason, and also because of its peculiar geographic distribution and the fact that it is almost uniformly fatal, it is believed that a report of this case will be of interest. Fifty-seven of the sixty-two cases reported are known to have originated in the San Joaquin Valley, California. The others were widely distributed, one from Louisiana, one from Texas, one from Arizona, one from New Mexico and one from Old Mexico.

The disease is caused by a specific fungus and usually affects males, most generally of the working class. The mode of entry is probably through the skin or by inhalation or ingestion, as has been demonstrated by Florence E. Ahlfeldt. The period of incubation the writer has been unable to find from the literature, though the experiments indicate it is probably from seven to ten days. The disease seems to have a preference for races other than the Caucasian, as recorded by Hammack and Lacey, of Los Angeles, in a report of twenty-three cases. It is almost uniformly fatal and death ensues as a rule within a year.

The initial lesion, in its onset, development and general appearance, is quite like tuberculosis, though it has some of the characteristic appearance of blastomycosis or lues. Practically all of the cases have shown lung involvement, bearing the appearance of pulmonary tuberculosis and in some cases marked pleurisy. Bone changes are noted in the greater percentage of cases and these are found particularly in the foot and ankle.

The treatment as recorded by Hammack and Lacey in their series of twenty-three cases was as follows: Three by potassium iodide, one by arsenic and x-ray, six by drainage, one by curettage and drainage, seven by amputation, and the remainder no treatment or treatment not known. In all of those thus treated, death occurred within a year, except in those cases where amputation was done, and also in the one case treated by arsenic and x-ray, which they reported as living five years after treatment. Of those operated on two were in the hospital at the time of the report, and the remainder were living and well one, two, five and nine years later respectively.

CASE REPORT

Male, Filipino, twenty-three years of age. For the last two months prior to entering the hospital he

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[*] Read before Seattle Surgical Society, Seattle, Wash., Oct. 6, 1926.

BLOOD PICTURES

	Hbg.	R.B.C.	W.B.C.	Polys.	Small Lymph	Large Lymph	Transitional	Eosin.	Basoph.
March 12	70	3,500,000	7,200	79	5	5	4	4	3
March 26	70	2,468,000	11,000	86	11	3	..	..	..

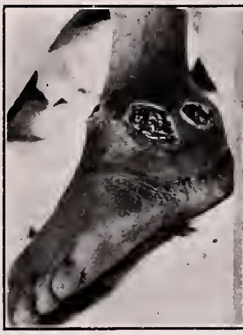

Fig. 1.

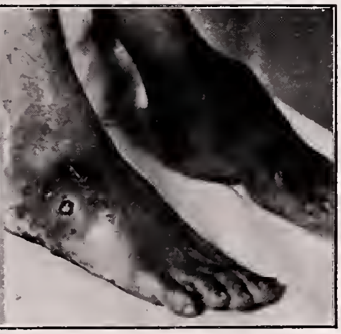

Fig. 2.

Fig. 1. Primary lesion. Note large swelling of foot.

Fig. 2. Lesion beginning on right foot. Note swelling on inner portion of left foot and ulcerated area beginning at base of great toe.

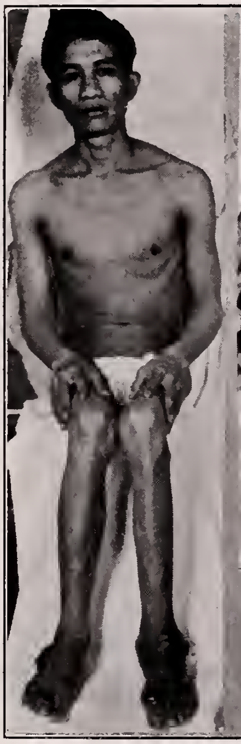

Fig. 3.

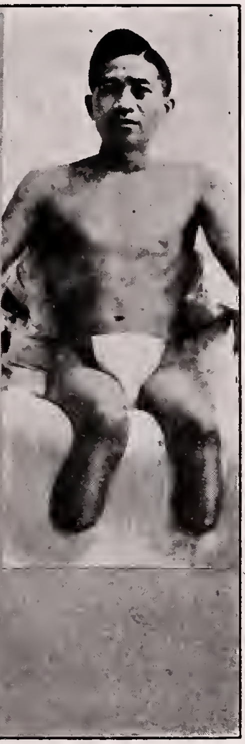

Fig. 4.

Fig. 3. Note general emaciation and distressed facies before operation.

Fig. 4. Note happy expression and robust appearance five months after second amputation.

resided in a small settlement near Ketchikan, Alaska, and for one month before going to Alaska he lived in Seattle and worked on steamers plying between the Orient and the Northwest Coast of America. He has never been in California. Entered King County hospital March 4, 1926, at which time there was swelling of the left ankle, also two ulcerating areas and a papule the size of a marble at the base of the great toe. Diagnosis of coccidioidal granuloma was made by Dr. Henry Odlund, and the diagnosis confirmed in the laboratory by the finding of the coccidioides immitis from the exudate taken from the ulcer.

The history reveals that the condition began in December, 1925, with a swelling on the outer aspect of the left ankle, which continued until in February, 1926, when the skin broke and the ulcerated area began. The lesion was painless. Patient's history negative. Venereal disease denied, Wassermann sputum and urine negative.

Radiograph of left foot showed destruction of os calcis and astragalus with marked swelling of soft tissues about ankle. That of right foot showed no definite bone pathology. Chest radiograph showed light mottling of upper lobe regions of both lungs, suggestive of tuberculosis.

On March 28 an ulcer appeared on the outer side of the right foot and at the same time it was noted that there was a swelling between the bases of the first and second toes of the left foot.

On April 10 the blood picture was practically unchanged from that recorded March 26.

The temperature ranged from 97 to 103°, pulse 80 to 100, respiration about 20.

On April 21, amputation of the left leg in the upper third was done under spinal anesthesia, following which there was gradual decline in the temperature and within a week the temperature range was from 99° to 101°, the chest picture remaining about the same. The right foot grew progressively worse, though for experimental purposes it was treated by the use of potassium iodide and application of one-half per cent copper sulphate solution. Emaciation progressed, the right foot continued to grow worse, the temperature again began to rise to its former height and surgical intervention was necessary. Accordingly, on July 5, amputation of the right leg in the upper third was done under spinal anesthesia. Temperature dropped to normal on the fifth day and remained normal to subnormal thereafter until improvement had reached a point where the patient could be gotten up and out. Thereafter he was about in a wheel chair and in the sunlight and fresh air as much as possible and there was no further treatment. He is now well and happy, as shown from the photographs of December 30, 1926.

A chest radiograph of Sept. 28 showed practically the same mottling of both upper lobe regions as presented before operation.

SUMMARY

1. Coccidioidal granuloma is a grave infection and probably it is quite frequently unrecognized.

2. While the majority of cases have occurred in Southern California, the fact that the disease has been found from Louisiana to Alaska would seem to support the suggestion that it has a wider range of distribution than has been formerly supposed, and also that the condition is frequently mistaken for other maladies.

3. Since this condition has been known for a period of only a few years, and in view of the already widespread distribution, it is believed not unlikely that it may become a more or less general menace to public health.

4. This is apparently a spontaneous case originating in Alaska.

5. The only treatment is early and radical surgery.

POSTURAL DEFECTS IN CHILDREN*

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The term "faulty posture" ordinarily calls to mind a vague picture of a child with slight curvature of the spine, round shoulders or a protuberant abdomen, and perhaps an equally vague suggestion that more time be spent out of doors, that some exercise be taken and that the condition will no doubt correct itself as the child grows. An increasing amount of attention is being directed toward postural defects, as a review of the recent literature will show, and the object of this paper is to discuss certain conditions which may be included in this diagnosis and indicate what may be accomplished by treatment.

How often are children brought to the pediatrist with some of the following complaints: nervousness, irritability, will not sit up straight, can't be quiet for five minutes, too tired to eat properly, don't gain weight, always stands on one leg, sleeps poorly, has constipation, vague pains in back, legs or abdomen, and so on. It is not suggested that these symptoms are always produced by or due to faulty posture, but in the cases which upon careful examination show no organic lesion, it is surprising to note the high percentage of excellent results both physical and mental which follow correction of posture.

How many so-called functional disorders also of adult life are due to faulty posture which began in childhood and which was overlooked because there was no disability or acute symptoms! Poor posture does not by any means always produce symptoms. Otherwise our attention would have been much more closely focused upon it. Neither does it usually tend to correct itself, as witness the great number and variety of defects seen in middle life, the number of rejections on military examinations, and the train of secondary symptoms such as backache, muscle and joint strain, and general debility which can be traced to early postural defects.

The reason for the frequent lack of early symptoms is that in many instances bad posture undergoes what has been termed compensation, that is, muscular power becomes great enough to permit normal activities in spite of poor posture, and this strength continues through youth and early adult life. Later, after the individual has become accustomed to his posture, he does not associate it with the secondary symptoms which appear with advancing years as mucular power wanes. Yet early faulty posture is exactly where the blame should be placed for many of the conditions which are so difficult to relieve in later life. Strained ligaments and muscles may become the point of election, where toxins from infected teeth or tonsils manifest themselves long after childhood. Chronic constipation, indigestion, general lowered resistance, lumbago, "sciatica," all may have a distinct basis of faulty posture. The individual who is nervous and irritable, such as a chronic grouch or a nagging woman, may be simply exhibiting the reaction to a constant muscular strain, due to a faulty posture aggravated by increasing weight and diminishing vigor.

Defects of posture are all due in the last analysis to the fact that the upright position, whether standing or sitting, is not a position of rest, and in order to maintain it there must be excellent coordination and strength of muscles with no relaxation of ligaments and joints. If muscles are weak or fatigued, the burden of maintaining an upright position falls upon the ligaments and when these are subjected to continued strain they lengthen, allowing the body to assume positions which continue to produce muscular and ligamentous strain. The weaker the ligaments and muscles, the worse the posture; the worse the posture the greater and more continuous the strain upon the muscles and ligaments with consequent weakening, a typical vicious circle. In order to break this circle we must either strengthen the muscles until they are able to meet the demands put upon them, or else correct the posture which is making undue demands.

The pediatrist has a double responsibility, first, through his usual contact with patients to relieve the immediate symptoms due to postural defects; and, second, through his occasional contact with school authorities and children to emphasize physical principles that will correct postural defects which, though they may not be causing symptoms, are potential sources of distressing conditions in later life.

What, now, are some of the actual defects which present themselves? It is unnecessary to dwell at length upon the early cases of scoliosis which have an obvious etiology and which are corrected as soon as the causative factor is removed. These cases are usually due to such conditions as incorrect clothing, sitting upon one foot, carrying books always on one arm, rotation of the body at the school desk, defective vision or hearing which causes the child to turn the head constantly to one side, etc. In the cases, however, where the scoliosis has been of longer duration, the problem is different. Here we may find a curve which the child can not voluntarily straighten or one which shows a flattening of one side of the chest, or prominence of one side of the back as he bends forward.

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* Read before the North Pacific Pediatric Society, Victoria, B. C., June 22, 1926.

These conditions indicate structural changes both in the skeleton and in the muscles and ligaments, and with the exception of the rigid types, these are the cases which give most satisfactory results from muscle training and posture correction. In such a case examination will show that the erector spinæ muscles on the convex side of the curve are stretched and weakened, and are working at a marked mechanical disadvantage against those on the concave side which occupy the position of the string of a bow. Also, the other muscles of the back and sides have begun to adjust themselves to new positions and directions of pull so that some groups are becoming stronger and some weaker, increasing the condition of muscle imbalance. This condition extends to the muscles of the front of the spine so that we often find the neck and psoas groups involved.

Under such circumstances all general activities of the child result in strengthening the strong muscles at the expense of the weaker, and it is quite conceivable that a condition of moderate scoliosis might be aggravated by a well-meaning parent in following out a general suggestion that the child take more exercise, for a child follows the line of least resistance. He is concerned only with the result of muscular action and he makes his motions in the easiest way. If, for example, he is to take bending exercises, he may accomplish an excellent series of bending motions by using several strong muscle groups, while a weak erector spinæ or psoas group takes little of the load and actually becomes weaker.

Under skilled supervision the weak muscles may be built up, contracted ligaments may be lengthened and the deformity corrected by reversing the process which prdouced it in the first place. Such cases need no longer be treated by stiff jackets or by braces, except at times when the patient is away from supervision temporarily, and some form of apparatus seems desirable to hold what has been gained. The exercises must be taken in a definite order, beginning with the muscle groups which are least affected, rather than by attempting the weakest first, and then gradually progressing as the increased strength warrants. Thus it is desirable to begin with exercises in a lying position, so that all muscle groups except those under training may be at rest.

The treatment of scoliosis usually begins with development of hip, pelvic and lower trunk groups, because the pelvis must supply a firm attachment for the muscles above. Then the intercostals and the abdominals are trained and finally those which act more directly upon the deformity, as the rhomboids and erector spinæ groups. These exercises are combined with stretching, either by suspension apparatus for head traction, or by hanging by one or both hands, also by voluntary muscular straightening of the spine, while lying on a hard surface assisted in some positions by firm pads.

Such a course of training requires constant supervision, for it is very easy for a child to slip gradually into a wrong manner of doing an exercise, even though he may be giving the best cooperation of which he is capable. When such supervision is available the treatment of suitable scoliosis cases is most satisfactory. The child is able to go about his usual activities without the burden of apparatus and he is constantly improving in muscle power, respiratory capacity and function of the abdominal organs, while his deformity is being corrected. Even in the more resistant curves this treatment is beneficial and will develop compensatory curves and improve flexibility so that the erect posture is much more easily maintained, although the scoliosis may not be greatly altered. The treatment is in every way preferable to the former methods of attempting to correct the condition by the pressure of casts or braces.

Another type of postural defect frequently met with is seen in the slender undernourished child who complains of headaches, poor appetite, fatigue and irritability. Such a child usually has the body form which predisposes to low muscle tone, hyperextension of the knee joints and relaxation of ligaments, all of which require increase of muscle control and coordination to maintain balance.

The symptoms exhibited by such a child are usually those due to the constant involuntary strain of controlling the upright position. When the end of the day comes, he is too tired to eat properly, is irritable, is emotionally unstable, so that parental restraint is irksome. Sleep is delayed and restless until the irritable muscles finally relax, when it becomes deep and quiet but so short that morning comes too soon and sufficient rest is not obtained to store up reserve for the next day. Such children often complain of pain in the back and legs and are said to have "growing pains" or rheumatism. They may have abdominal symptoms, such as vague discomfort, atonic constipation with bulky stools, attacks of nausea or vomiting, diagnosed by the mother as "bilious attacks," orthostatic albuminuria, and they are usually subject to frequent colds on account of impaired nutrition. This may sound like a melancholy picture but is no worse than we find on physical examination.

In the great majority of cases the examination shows general muscular weakness and an exaggeration of the normal spinal curves with other symptoms secondary to these defects. The muscular weakness of the child's neck allows this cervical spine to bend further forward than normal. This makes him raise his chin in order to obtain horizontal vision and it is hard for his jaw muscles to keep his mouth closed. Also it relaxes the cervical fascia which, with its expansion through the right side of the pericardium, acts as the chief ligament for the support of the diaphragm. This relaxation lengthens the chest cavity, narrowing it and allowing the ribs to drop downward, diminishing the costal angle, increasing the dorsal curvature of the spine and putting strain upon the back muscles. The lowering of the diaphragm throws the weight of the abdominal viscera upon the mesenteries and ligaments, resulting in altered blood supply, pressure and impaired function. The weight of the viscera draws the lumbar spine forward and puts an additional strain upon the abdominal wall which gradually relaxes. The pelvis tilts forward, straining the ligaments and stretching the hamstrings and the sciatic nerve, causing pains in the hips and legs.

With such a physical condition it is easy to understand the headaches, growing pains, bilious attacks, frequent colds, and malnutrition, and to see how hopeless it is to treat such a child with tonics and general advice to exercise more in the open air. His atonic musculature is already fatigued from trying to hold his frame erect. He needs more rest, not more exercise. He needs a carefully supervised development of his abdominal wall to support his viscera, of his lower back and thigh muscles to stabilize his pelvis, of his intercostals and cervical muscles to enable him to breathe properly, restore his circulation, hold his chin and his diaphragm up, and of his back and trunk muscles to enable him to maintain the upright position without fatigue. In addition to his muscle training he should have definite rest periods and exact instructions as to the position of rest, in order to obtain the maximum benefit from the relaxation.

As with scoliosis such a course of treatment requires time, patience and strict control, with variations to meet the requirements of the individual child. The exercises should be taken at home at least once daily and preferably twice, and should be done under the supervision of the physiotherapist three times a week until the child has become thoroughly familiar with them, when the interval may be lengthened. The attending physician should inspect the work frequently in order to detect signs of fatigue on the one hand, and to increase the exercises as fast as the improvement warrants on the other. Physiotherapists who have had special training in physical education and who understand child psychology obtain the best results, for there must be complete cooperation on the part of the child and in many instances psychologic methods must be employed, such as the appeal to pride, a system of rewards, the element of competition, etc. This routine is not easy but the results are so satisfactory and gratifying that they are worth all the effort expended.

A variable degree of genu recurvatum is occasionally encountered in a child who has been confined to bed or who for some other reason has a weakened musculature of the legs. This is often considered as due to weakness of the hamstring muscles, but it is due rather to weakness of the quadriceps. A typical instance of this is seen in cases of infantile paralysis affecting the quadriceps, in which the knee is thrown backward and "locked" when weight is placed on the leg, so that the posterior ligaments of the knee and the hamstring muscles take up the strain. In postural defects of this type excellent results may be obtained by exercises to strengthen the quadriceps.

Flat foot is often seen in children and frequently reaches the degree of a postural defect. It is usually seen either in infants who are perhaps slightly overweight, have rather flabby muscles, and have been walking only a short time, or else in older children whose general musculature is atonic. In the former cases the feet should be supported in the corrected or slightly overcorrected position, either by felt pads under the arch or by raising the inner edge of the shoe sole sufficiently to throw the weight on the outer border of the foot or by combination of both. If this position is maintained, the tarsal bones and ligaments become adjusted to the correct position and, as the child's strength increases, his muscles tend to hold his arches up securely. In some instances this supporting treatment must be followed by muscle training to develop the anterior tibial muscles. When a child is old enough to follow simple instructions or to imitate motions, the most effective treatment for flat foot may be used. This consists of exercises to raise the inner border of the foot and develop the anterior tibial muscles. If the defect is marked, the arch should be supported during the process of development, but arch supporters without exercises are worse than useless, as the musculature of the foot is weaker than ever when they are removed.

Aside from the improvement in muscle power and posture it is most satisfactory to observe the gain in weight, color and general condition which almost invariably accompanies a development of the trunk musculature. It is the rule rather than the exception for a mother to report that the child who is "taking exercises" and who formerly was delicate and sickly is now the only one of the family who escapes the usual winter colds.

SUMMARY

Postural defects in children are usually due to the inability of an atonic musculature properly to maintain the upright position.

Faulty posture often results in a fatigue syndrome which presents numerous secondary symptoms which can be relieved by the development of the weak muscle groups.

Muscle training carried out under the supervision of a skilled physiotherapist not only corrects the defective posture but also brings about marked improvement in the general condition and in the resistance to infection.

The pediatrist, by early recognition and correction of postural defects, can relieve many troublesome conditions frequently encountered in children, and can prevent the development of others which often appear in later life.

Disabilities Caused by Hypophysectomy and Their Repair. Philip E. Smith, Palo Alto, Calif. (Journal A. M. A., Jan. 15, 1927), reports his observations on the results of the ablation of the hypophysis in a rat in which a replacement therapy could readily be given. The gland is sucked out through a glass cannula with negative pressure. The dural sheath of the gland, dorsally (diaphragma sellae), and the pituitary stalk are left intact. In contrast to the copious flow of cerebrospinal fluid reported in the dog, escape of this fluid cannot be seen in this operation. Healing takes place rapidly, and not any clear case of meningitis has developed. In addition to this, in a considerable number of animals lesions have been made in the hypothalamus by the well known temporal route, the pituitary being purposely avoided. These two operations, pituitary ablation and tuberal injury, produce distinct and characteristic syndromes. Hypophysectomy in the rat gives an invariable syndrome, the main features of which are: an almost complete inhibition in growth in the young animal, and a progressive loss of weight (cachexia) in the adult; an atrophy of the genital system with loss of libido sexualis, and in the female an immediate cessation of the sex cycles; an atrophy of the thyroids, parathyroids and suprarenal cortex; and a general physical impairment characterized by a lowered resistance to operative procedures, loss of appetite, weakness and a flabbiness that readily distinguishes the hyposectomized animal from the normal animal.

THE THYROID GLAND

PHYSIOLOGY, PATHOLOGY AND CLINICAL FINDINGS*

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In order to understand more clearly the pathologic findings and the clinical syndromes of thyroid disease, it is necessary to review some of the facts regarding the physiology of the thyroid gland.

PHYSIOLOGY

The thyroid gland provides the means for varying the heat production of the body: This can be shown in several ways. First, there is a decrease in heat production following thyroid removal. Second, the feeding of whole thyroid gland and its products causes a striking rise in heat production. Third, it has been shown that, when there has been sufficient but sublethal injury to the adrenals, there is a chronic increase in heat production which, however, is dependent on the presence of the thyroid gland. Fourth, in animals and in human beings there is an increase in heat production during lactation and pregnancy.

It has been known since the earliest work on the thyroid gland that a decrease of heat production followed thyroid removal. It has been shown by Marine that "thyroid removal causes a decrease in heat production, which is permanent if the thyroid is completely removed, but if, as frequently happens, fragments or accessory thyroid glands remain, regeneration occurs and metabolism rises again, in some instances to normal, due to these remaining bits of thyroid tissue which regenerate."

The increase of heat production following the administration of thyroid gland has been known since 1895, when Magnus-Levy first pointed out this important quality possessed by thyroid tissue and not possessed by other organs of the body. Alder[1] studied hibernating animals and showed marked increases in heat production, following the injection of thyroid extract into a sleeping hedge hog. One and one-half hours after the injection the respiratory rate increased, and in three hours the animal ran away. The temperatures after the injection rose from 9°, to 34–35° C.

Marine, Baumann and Scott have been able in 82 per cent of the cases to show a rise in heat production, varying from 10 to 63 per cent, by producing adrenal insufficiency in cats and rabbits, either by removal of the adrenal glands or by freezing the cortex of the adrenal after mobilization with as little injury to the blood and nerve supply as possible. The rise in heat production usually begins in from three to six days after injury or removal of the adrenals and may last from a few days to several months. If the thyroid has been removed prior to the adrenal injury, there is no increase in heat production.

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* Read before King County Medical Society, Seattle, Wash., Oct. 11, 1926.

[1] Alder: Berl. Klin. Wchnschr. 56, p. 958, 1919.

In animals and human beings there is an increase in heat production during pregnancy. Thyroidectomy in the rabbit abolishes or greatly reduces this normal rise of metabolism. Sanford and Wheeler[2] have shown that "the elevation of the metabolic rate is proportional to an increase in the amount of protoplasmic tissue, due largely to the growing fetus and partly to the increased protoplasmic mass of the mother incident to pregnancy." There is also the associated enlargement of the thyroid so frequently observed in pregnant women but it is not necessarily an indication of hyperthyroidism in the latter months of pregnancy. From these facts it is evident that "the thyroid gland is important, not only in maintaining a normal basal metabolism but also providing a means through its activity for fluctuations of the metabolism."

Another of the functions of the thyroid gland is to build a physiologic iodine out of the inorganic iodine salts which are present in the blood stream, while still another is to store the physiologic iodine ready for release to the body, due to a fluctuating demand from the tissues. Baumann in 1895 showed that iodine was a normal constituent of the thyroid gland, while Kendall in 1916 isolated in crystaline form the physiologic iodine, to which he gave the name thyroxin. "The human thyroxin is intimately associated with the globulin of the colloid material of the alveoli in varying amounts. The total amount of inorganic iodine in the normal human thyroid is approximately 25 milligrams or about 1 milligram per gram of fresh gland." Lugol's solution contains 126 milligrams of iodine per cubic centimeter or one cubic centimeter contains about five times as much iodine as a normal human thyroid gland.

The thyroid has an extraordinary affinity for iodine, which can be shown in several ways. First, if a thyroid with a low iodine content is carefully taken out of an animal and its blood vessels so arranged that they can be injected, it will be found that the thyroid increases its iodine content by several hundred per cent, taking the iodine from the injected solution. Second, if the iodine solution is injected into a vein of a living animal with a thyroid of low iodine content, the same increase in iodine in the thyroid is noted. If the iodine supply is made available by the gland, it increases its store to a maximum in animals in about five minutes. This is also true for the human thyroid. At first the iodine held by the thyroid is inactive, but in about twenty-four hours transformation from a chemical to a physiologic iodine can be demonstrated in the dog by the biologic tadpole test. Marine has been unable to show a fixed ratio between the active and the inactive iodine, which probably indicates that the active iodine is slowly elaborated from the inactive taken from the blood stream and either discharged into the circulation or stored in the colloid.

It is thought that the functional activity of the gland is controlled chemically, mainly through the blood stream but perhaps also indirectly through the sympathetic nervous system. Marine has shown that, "If the thyroid gland is encased in paraffin and the adventitial coats, including the sympathetic nerve supply, are stripped from the blood vessels, in that way severing all connections of the thyroid. except through the chemical effect of the blood stream, its functional capacity is not impaired. If autotransplants of thyroid tissue are made into other tissues of the body, as into the bone marrow, spleen, ovary or under the skin of the abdominal wall, these transplants show the same morphologic and chemical changes as are shown in the original tissue. If the original tissue shows hyperplasia, so do the transplants. If iodine is given, the transplants show the same involution and storage of iodine as occurs in the nontransplants. Hence, from the paraffin and the transplant experiments, it is shown that the thyroid hormone is active through the blood stream and that the sympathetic nervous system is not a necessary part of the regulatory mechanism of the functional activity of the thyroid gland."

Due to the variations of metabolism occurring during the life of the animal, especially in the female, there are evidences of great variations of functional activity of the thyroid gland. An increase of iodine has been shown to occur during the summer and a decrease during the late winter and early spring months. Thyroid enlargements have been reported by many observers during winter and spring months. In Marine's opinion "there is a notable increase in thyroid activity during puberty, during pregnancy and lactation, during menopause, during protracted febrile reactions (tuberculosis and syphilis), and following the prolonged use of certain diets, particularly those with a high fat and protein count. These conditions with increased thyroid activity correspond to the periods of life when thyroid enlargement or goiter develop. When thyroid activity increases, there is a decrease of the iodine content unless iodine is supplied in sufficient quantities. When the iodine content falls below 0.1 of one per cent, thyroid enlargement begins, while the normal structure of the gland is present with 0.2 per cent and the maximum store of iodine is between 0.5 and 0.6 per cent. The thyroid is provided with an enormous capacity for growth, which gives a wide margin of safety and a compensatory mechanism to meet increased functional demands." These physiologic enlargements of the thyroid are familiar to all of us as ordinary goiter.

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[2] Sanford and Wheeler: The Basal Metabolism, Before, During and After Pregnancy. J. Bio. Chem., 62, p. 329, Dec., 1924.

It has been shown by Wagner, Halstad and Ribbert that, if one-half to three-fourths of the thyroid is removed, a compensatory hyperplasia develops, histologically identical with spontaneous hyperplasia seen in developing goiters. Marine and Lenhart have shown that the compensatory hyperplasia does not develop until the iodine store is down to 0.1 of 1 per cent and that the hyperplasia increases as the iodine store decreases. However, if three-fourths of the gland is removed and traces of iodine are given to the animal, no compensatory hyperplasia takes place in the remaining portion, as would occur if iodine were withheld. Thyroid extract will prevent hyperplasia, even if five-sixths of the gland is removed.

Congenital goiters can easily be produced experimentally in the young by the removal of one-half to three-fourths of the thyroid gland of pregnant dogs, cats, sheep and rats, if iodine is withheld during pregnancy. Conversely, it has been shown by Halsted, Marine and other observers that the giving of one to two milligrams of iodine, only a trace, to a pregnant thyroidectomized animal, prevents entirely the young from having enlarged thyroid glands. Marine has been able to produce alternate litters from the same animal of goiterous and nongoiterous young by merely withholding or administering iodine.

PATHOLOGY

In order to study conveniently the pathologic processes which take place in the thyroid gland, it will be well to divide them into two groups, exhibiting the nontumorous and the tumorous changes.

The nontumorous gland. We will take up first the nontumorous thyroid gland. Of course the normal thyroid gland is tumor-free, and weighs, according to various authorities, from 25 to 35 grams. The heavier thyroid glands, which are considered normal, usually are reported from the goiterous regions, while the thyroids of less weight are noted in the nongoiterous areas of the world. The fresh normal thyroid on cross section shows a translucent, jelly-like, beefy red, lobulated surface which bulges slightly over the edge of the capsule. The scrapings from the surface are bloody and sticky colloid material. The colloid is in all probability the main secretion of the gland and is the principal iodine-containing material in the body. The lobulated surface which is noted on cross section is quite regular throughout, the lobules being formed by the fibroelastic connective tissue plains, extending in from the capsule of the gland. These plains of fibroelastic tissue are the general framework of the thyroid gland, giving structure to the follicles as well as support to the arteries, veins, lymphatics and nerves.

The iodine content of the normal thyroid gland is about 3 mg. per gram of dried gland. As the cellular elements of hyperplasia increase, the iodine content decreases. A thyroid gland that once has been subjected to cellular change due to a deficiency of iodine usually will not again attain its normal iodine content.

The simplest and at the same time a common form of goiter is that to which the term parenchymatous or colloid goiter is applied. All parts of the gland are enlarged, usually the right lobe being somewhat larger than the left. The goiter, therefore, is always bilateral and preserves the shape of the normal gland. The enlargement is caused partly by an increased accumulation of dense colloid material within the follicles and partly by an actual increase in the connective tissue framework of the gland itself. Some of the older writers consider that it forms the first stage in nearly all other varieties of goiter, while the more recent observers state that it is more probably a quiescent stage. It is the form especially common in the young in goiterous regions. One rarely finds colloid goiter beginning after middle life. This is the type which often can be reduced by the careful giving of small amounts of iodine. The fresh specimen has a soft, spongy feel, is translucent, and the sticky colloid material readily exudes from its cut surface. This parenchymatous or colloid goiter may produce symptoms of a mechanical nature as well as be associated occasionally with the syndrome of Graves' disease. The weight of this type of goiter may run into the hundreds of grams.

The thyroids showing hyperplasia, nontumorous, are exceedingly firm on pressure, may be but slightly overweight and are the type found in about 68 per cent of the cases of Graves' disease. The capsule contains markedly enlarged veins, many of which are thin walled, as is borne out by the ease with which they may be torn during a surgical procedure. On cross section the surface is lobulated and has an opaque, grayish cellular appearance. The connective tissue septa are more numerous and larger than the normal, often showing cross sections of arteries and veins. Scraping the surface may show little or no colloid material. Microscopically there may be little or no colloid in the follicles which are lined by cuboidal or columnar epithelium, some of which has been thrown into folds due to the crowding together and overgrowth of cells. There is a marked enlargement of the blood vessels as well as an increase in their number. There is also an increase in the stroma. Many areas of epithelial cells are noted which have not as yet formed into follicles. The degree of hyperplasia is designated as slight, moderate or marked according to the amount of cellular elements present which are inversely proportional to the iodine content per gram of dried gland.

The tumorous gland. The so-called fetal adenoma is not uncommonly found in thyroid enlargement, especially those of unilateral or median line origin. The fetal adenoma may be found in any stage of degeneration. First, it is called an adenoma because it is definitely encapsulated, contains a very embryonic type of myxomatous stroma, and does not seem to be subject to the usual physiologic laws. There is little use for designating it as fetal except that it has the microscopic appearance of fetal thyroid tissue. The fetal adenoma with a definite capsule causing it to shell out easily is subject to innumerable pathologic changes. It may be made up of solid masses of epithelium which have not as yet formed follicles, or it may be filled with dense colloid masses with hardly enough stroma to hold it together. However, the thick capsule differentiates it from the types to be mentioned later.

It is also subject to hemorrhage, cyst formation, edema, scar tissue growth, calcium deposition bone formation, even containing bone marrow cells, hyperplasia and most important of all, its frequent tendency to malignant degeneration. It may be rapidly malignant, metastasizing to the lungs, giving symptoms difficult to differentiate from those of tuberculosis; or it may develop slowly and be of such low grade malignancy as not to invade beyond the capsule. In a large percentage of malignant thyroid conditions coming to operation, gross and microscopic evidences of fetal adenoma are found to be present. The fetal adenoma takes up and looses iodine as does other thyroid tissue but does so much more slowly. Also, as does the normal thyroid gland, it can change chemical iodine into physiologic iodine.

The nodular type of goiter, which usually begins its growth about the time of adolescence, is also designated multiple colloid adenomatous goiter, the name describing it very well. The gradual changing of the normal thyroid gland to a nodular type usually begins at the lower poles near the trachea, and as the years advance gradually passes upward, in the end invading the whole thyroid gland. These tumor nodules are also encapsulated, but their capsules are thin and inseparable from the general stroma of the gland. Grossly they are usually pale yellow, translucent, coarsely lobulated structures, many of the follicles being one cm. or more in diameter. They have a high iodine content, 1.5 to 2.0 mg. per gram of dried gland. This is the type of gland which becomes larger with each successive pregnancy, not receding in the interval, and comes to operation because of dyspnea and dysphagia due to tracheal and esophageal pressure, facial cyanosis and often for cosmetic reasons.

Fetal adenomas are dangerous because of their tendency to malignant degeneration, while the multiple colloid adenomatous goiter may be but a normal change, due to the body's attempt to conserve its iodine. Experimental animals including monkeys are rather free from tumorous thyroids, hence it is much more difficult to control these changes experimentally than the nontumorous thyroid conditions, which are common both to man and animals.

Reinhoff has shown rather conclusively that the multiple colloid adenomatous goiters, also called simple adenomata to distinguish them from the thick capsulated fetal adenoma, are thyroids in which the hyperplastic condition with areas of hyperinvolution has been repeated several times, due to new excessive physiologic demands, as repeated infections, pregnancies, or iodine deficiencies, etc. Therefore, if the thyroid had been supplied with sufficient iodine and had been able to utilize the iodine, none of the nodular forms would develop. This is the largest group of preventable thyroid disease.

The knowledge that congenital goiter can be prevented by giving small amounts of iodine was first utilized on a large scale in the prevention of goiter in brook trout in 1910. Since 1916, these facts have gradually been more widely applied to growing children, in isolated groups, but especially in Switzerland under the direction of a national Swiss goiter commission.

During 1923 the average weight of thyroid tissue removed at the Seattle General Hospital was 95.8 grams. In 1925 the average mass of thyroid removed weighed 50 grams. If this decrease in the amount of tissues continues, surgeons can boast more and more of short beautiful scars. Some one has facetiously suggested that there really is no necessity of making a scar for the removal of so small a piece of tissue, and that a really clever surgeon could remove it through a good sized hypodermic needle.

CLINICAL SYNDROME

The classical signs and symptoms of clinical exophthalmic goiter are too well known to require repetition. In less typical cases, without palpable tumors and only a slight thyroid enlargement, with or without thrill or bruit and where there is a history and physical evidence of long standing disability, there may be questionable eye signs, including exophthalmus. There may be mild degrees of tachycardia, palpitation, nervousness, vasomotor disturbances, increased appetite, loss of weight and strength. There may be alterations in blood pressure and pulse pressure not characteristic of exophthalmic goiter, but symptoms and signs from the cardiovascular system may predominate, as auricular fibrillation, myocarditis and decompensation.

The absence of exophthalmus, thrill and bruit in the thyroid; a slight degree of nervousness, palpitation, tachycardia, vasomotor and gastrointestinal disturbances; the absence of increased appetite and the loss of weight and strength; the increased blood pressure; the predominance of cardiovascular signs; these make up the clinical picture of toxic adenoma. But just how do these symptoms and signs differ from those of atypical cases of exophthalmic goiter?

However, if the thyroid contains a tumor mass and the patient has many of the classical symptoms and signs of exophthalmic goiter, then the clinical diagnosis of toxic adenoma is made. What are some of the signs and symptoms associated with toxic adenoma? A group of observers with wide experience are of the opinion that the symptoms and signs are frequently early menopause phenomena, made markedly worse by the injudicious use of iodine or thyroid extract. In other words, the trouble is caused by the menopause plus the use of iodine or thyroid. To be sure this explanation is not popular with the surgeon. The thyroid, because of its superficial location, is blamed for many things of which it is not guilty. If the adrenals were as accessible and underwent as great anatomic changes, they would be blamed for many things.

A tumor mass in the thyroid gland may be palpated with much difficulty, even after its removal from behind the skin and muscle bands. Only adenomata which contain areas of dense scar tissue, solid masses of colloid, thick walled cysts with increased fibrous tissue, or which are of increased relative size can be palpated. Very frequently the clinical diagnosis of toxic adenoma is made when the gross and microscopic thyroid tissue contains no tumor mass whatever, but may be made up of colloid goiter or moderate hyperplasia with islands of lymphoid tissue. The patient may have a classical syndrome of exophthalmic goiter and the thyroid may be a predominating mass of colloid material with fetal adenomas in all stages of development together with a generous scattering of lymphoid tissue. A certain percentage of cases may run true to form but many are the disappointments after the cross checking of the pathologic findings and clinical signs.

An attempt has been made in this paper to show that a wide range of physiologic activity is part of the normal function of the thyroid gland. Its superficial location in the neck, where it is constantly visible, makes it decidedly dangerous for the thyroid to enlarge as a result of doing a perfectly normal piece of its physiologic duty, for the patient may object to its presence or it may be spied by an enthusiastic surgeon, when, presto, sometimes before the patient knows it a piece of thyroid tissue, weighing 10 grams or less, is in formalin.

TOXIC GOITER*

ITS CLINICAL HISTORY WITH REVIEW OF 500 CASES

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This paper is a discussion of the histories and experiences of more than five hundred toxic goiter patients, most of whom have been operated upon and the diagnosis confirmed by pathologic section and the clinical cure or improvement of the patient. A majority of these have presented themselves without having had a previous examination for their present complaint, or have been referred with a correct diagnosis already made.

Previous erroneous diagnoses have occurred with sufficient frequency to warrant mention of the diseases for which toxic goiter has been mistaken, and will be mentioned in the order of frequency in which they occurred. It is fair, I believe, to assume that such diagnoses will be made with less frequency in a community where goiter is prevalent than in districts where toxic goiter is infrequently encountered. A number of these patients have consulted from one to ten different doctors. Too often this has served to add a confusion of diagnoses to an already bewildered patient. It, therefore, seems that a review of the complaints of these people may be of value.

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* Read before the Meeting of Seattle Surgical Society, Seattle, Wash., Dec. 7, 1926.

The diseases for which toxic goiter has been mistaken will be mentioned first so that they may be borne in mind in a discussion of the symptoms. No attempt will be made to give a complete historical differentiation between these diesases and toxic goiter, nor is it intended to enter into any lengthy differentiation between the histories of the toxic adenoma and exophthalmic goiter.

The diagnosis, "nervous breakdown," an ambiguous term at best, stands distinctly at the head of the list of mistakes. It occurred perhaps as frequently as all others combined. Next is heart disease; third, influenza; fourth, intestinal flu; fifth, nervous indigestion; sixth, hypertension; seventh, various psychoses, nephritis, tuberculosis, gynecologic disturbances, etc. "General run down condition" has done over time as a diagnosis. One man had his gallbladder removed for the jaundice of an exophthalmic goiter. Numerous others had had teeth and tonsils removed. A few appendices had been removed in cases with pronounced gastrointestinal symptoms.

Almost without exception the patients have been made worse by any operative procedure, even the extraction of a tooth. A few days ago, I saw a case of exophthalmic goiter that developed a marked hyperthyroid reaction and a temperature of 101° from a single hypodermic injection of an ampoule of iron solution. The patient with toxic goiter, be it exophthalmic or adenomatous, is poorly equipped to withstand any sort of trauma. I mention this because of a pernicious influence that still pervades the treatment of the goiter patient.

A few years ago a number of articles appeared in medical literature relative to the benefits of tonsillectomy to the goiter patient. These were chiefly concerned with associated goiter of adolescence. Others attempted to hitch up focal infections and exophthalmic goiter. As I have seen it, the unhitching has proven a rather sad experience for the toxic goiter patients. If focal infection of a damaging nature be present, it should be left until the goiter is removed. The foregoing list, it will be noted, includes diseases referable to almost every organ in the body. But when it is considered that toxic goiter is essentially a disturbance of so vital a function as metabolism, there is no organ in the body that may not be affected by a disturbance of this function.

It often requires considerable patience to get a true story of the patient's symptoms. Often he will unduly stress one symptom, while entirely forgetting more important ones. The triad of symptoms, nervousness, tachycardia, and loss of weight, may mean much or little, but certainly needs qualifying. The symptoms complained of are seldom referable to the neck and, therefore, do not point directly to the location of the disease.

HEART SYMPTOMS

The most frequent single complaint is referable to the heart, yet not infrequently one encounters a patient with toxic goiter who gives few or no symptoms referable to it. The one symptom which occurs with the greatest frequency, and which has the greatest diagnostic significance is the inability of the patient to sleep on the left side or at least to sleep comfortably. Of about equal and parallel significance and importance to the question, "can you sleep on your left side?" is the question, "does your heart pound when you lie down?" Many patients will tell you they can hear their hearts beat when they lie down. When an individual lies on the left side, the apex of the heart against it becomes annoying and disturbing. In the upright position, the heart is suspended and the apex does not strike the chest wall with such force. When the patient is on the back or right side, the semielastic pericardial sac absorbs much of the shock of the apex beats. In conjunction with the foregoing it has been an interesting observation that the pain complained of in the region of the heart by the goiter patient is more often at the apex than at the base, such as occurs in anginal and allied conditions.

Several patients have complained of a tenderness of the left breast, others of a sensitiveness of the skin in the region of the apex, due no doubt to the effect of the pounding ventricles on the intercostal nerves. In some patients the heart beats hard and fast continuously. In others the attacks come on without apparent cause. In nearly all the cardiac reaction to exercise and excitement is out of proportion to the degree of effort or the stress of circumstances.

Questions should be asked to elicit any history of irregularity of heart action and edema of the ankles, as these symptoms give evidence of cardiac damage and decompensation. Relative to increased pulsations, in extreme cases the patients may feel a pulsation throughout the entire body, but the majority of them will only have noticed it in the neck and the epigastric region, due respectively to increased pulsations in the carotids and the abdominal aorta. The range of disturbed cardiac activity is extremely wide and varies from the violent heart beats that shake the bed on which the patient lies or are audible for a few feet, down to slight attacks of palpitation or shortness of breath on exertion.

GASTROINTESTINAL SYMPTOMS

A surprising number of patients have centered their complaints on some gastrointestinal disturbance. The story generally runs something like this. "A few months past I began to get nervous and shaky and lost my appetite. I was nauseated for a few days or a few weeks at most. Any kind of food caused distress; a sensation of fulness in the upper abdomen. This passed off and then I had an abnormal appetite,, could eat anything without distress, was always hungry, but continued going down and losing weight and strength. About the same time, I noticed my heart beating hard and fast. I was warm all the time and perspired freely." Others have had a painless and unexplainable diarrhea or looseness of the bowels, lasting from a few days in some cases to three or four weeks in others. Some have had single attacks, others recurring attacks; some have both nausea and diarrhea; some have vomiting and this, unless of short duration, becomes a very serious phase of the disease. There is no other disease that gives the foregoing history. A diagnosis can be established with practical certainty on such a history.

It is difficult on a physiologic basis to explain the symptoms of nausea, vomiting, and diarrhea, unless they are of a toxic nature. Unfortunate, indeed, is the individual who in the presence of so ravaging a disease as exophthalmic goiter loses his appetite or develops so active a peristalsis that he passes his food on, ere he has had an opportunity to extract from it its much needed calories. It is, therefore, to be expected that the stages of this disease associated with the foregoing symptoms, plus the high metabolic destruction, would be accompanied with rapid loss of weight and strength. The loss of both is usually out of proportion to the history of the severity of the symptoms.

It is in this group of patients that the erroneous gastrointestinal diagnoses have occurred. I always suspect toxic goiter in any adult who gives a history of having had "intestinal flu" or painless diarrhea. Gastrointestinal disturbances in toxic adenoma are not frequent, but occur occasionally in the more active phases of the disease.

An unusual and almost freakish example of this occurred in a woman aged 54, in whom no other pathology than a large adenomatous goiter could be found. She gave the following history: For two years she had had a painless nocturnal diarrhea. During the daytime she frequently had no movement, seldom more than one; at night she had from five to ten movements. A careful history elicited the fact that she had a twelve-hour food cycle, instead of the normal twenty-four to forty-eight. Particles of food taken at breakfast were passed early in the evening and so on until morning. when the intestinal tract had practically emptied itself. She took food during one twelve-hour period and passed it the next. No less interesting is the fact that this patient did not have a bowel movement for four days following operation, and that she has had no return of the diarrhea since, now nearly two years.

NERVOUS MANIFESTATIONS

The nervous symptoms have been many and varied, the more frequent of which have been described as a "feeling of nervousness." The patients are restless, impatient, irritable and cranky. They lose the power of concentration and continued effort. Small annoyances disturb them out of proportion to their importance. Increased excitability is a most constant symptom, along with it being an increased physical response to excitement and emotional disturbances. They often say they become so weak and shaky from excitement on being startled that they are almost helpless. The ringing of the phone or door bell may upset them markedly. Emotional disturbances are frequent. They cry about nothing at all or get mad about less. They are difficult to manage both at home and abroad. In contradistinction to the neurasthenic, the goiter patient is a hopeful or optimistic individual. He believes in himself and his ultimate recovery. He may and often does have periods of depression. He may lose interest in his work but not in himself.

Of all the nervous symptoms, the one that most concerns the patient is tremor. To her it is frequently the most conspicuous symptom. However, "it is not purely a nervous but a neuromuscular symptom. She notices it when writing, eating, threading a needle, etc. She spills coffee or tea over herself or her friends, drops dishes and does various other embarrassing things. Women often get so they avoid social functions, teas, etc., for this reason, and because they don't want other women to think they are easily fussed or confused. In addition to the tremor of the hands and knees, they often describe a trembling, shaky feeling inside them. They cannot locate it, but when they have this feeling they usually also have an exophthalmic goiter.

MENTAL SYMPTOMS

A true psychosis has only been encountered once in this group of cases. This patient had been confined in an insane asylum for violent outbursts of temper and because she sat out in the rain clothed only in her nightgown. These outbursts could be explained by the presence of an exophthalmic goiter. It is also possible that she sought relief from an excessive heat production by recourse to the only available shower, as at the time of the onset of her illness she resided in the country, where bath tubs and showers were nonexistent. It is now more than one year since she was operated upon, and while at present she is no mental giant, she is in no way different from her previous normal mental and physical state.

Several cases of delirium and coma were encountered. These are as a rule of short duration, chiefly because they die in this state, unless checked in a short time. However, one patient was delirious intermittently for nearly three months.

NERVOUS BREAKDOWNS

It has been an interesting observation that from 20 to 30 per cent of all toxic goiter patients gave a history of one or more nervous breakdowns, also that fully 90 per cent of those who have given such a history on careful analysis have described clinical symptoms strikingly parallel to exophthalmic goiter and should have been so diagnosed. Nervous breakdown is a dangerous diagnosis and will lower your batting average if you stick to it. The term, however, has a peculiar fascination to the average lay mind. The patients usually volunteer this information. I have not been able to accurately fathom the psychology of it, unless it be that the average human being likes to convey the impression that his has been a hard lot, his burdens heavy or that he has been misunderstood. Be that as it may, the history of a nervous breakdown is a most important clue and generally narrows a diagnosis down to one of two groups of conditions, namely, the neurasthenic group, including the nervous exhaustion and neurocirculatory asthenic types and the toxic goiter states. If one will think of a nervous breakdown as in the majority of instances signifying one of the two conditions, it will help to clarify many diagnoses. It might be said that a basal metabolic determination is the Wassermann test of the nervous breakdown. A few well chosen questions should, however, differentiate between the neurasthenic and the toxic goiter syndromes.

HEAT DISTURBANCES

It is not possible to have an increase in basal metabolism without having an increase in heat production. The patients whose metabolic rates reach the higher levels are naturally the ones who complain most of a sensation of warmth. They wear fewer clothes, sleep under lighter covers, avoid warm rooms and close places. They require more fresh air than the normal person, as their need of oxygen is greater. Hot weather is very depressing to them.

An amusing case of this sort occurred three or four years ago. During the early winter months the wife of a young man developed an unusually active type of exophthalmic goiter. She had a metabolic rate of plus 90 per cent. Along with the other symptoms there was a marked increase in heat production and sensitiveness to heat. Her husband was one of those persons who is always cold. He would get up in the morning, build a hot fire and heat the house. When he went to work, his wife would put out the fire, open the doors and windows. When he would return in the evening, the house would be freezing cold and again he would fire up. After dinner the wife would sit in the kitchen with the windows open, and he in the living room with a fire. When it was explained why she was so warm, the husband laughed and said, "Doctor, I am glad you told me that for I was beginning to think that woman was getting mean and trying to freeze me out."

Most of the symptoms of toxic goiter are explainable on the basis of altered physiology. Considerable is known of the pathologic physiology of exophthalmic goiter. When considering the diagnosis of exophthalmic goiter, if the given symptoms do not coincide with the known physiologic changes, it is safe to assume that one is dealing with another condition. It is in connection with this increased heat production in toxic goiter cases that I have observed one of the distinguishing differential diagnostic features between the toxic goiter patient and the neurasthenic. The former is warm and has warm hands, often flushed with well distended veins. The neurasthenic is often cold or has chronically cold hands, the pale, veinless type. I know of no single differential diagnostic feature that is more significant than this. I have made it a rule to shake hands with every new patient that comes into the office. It has given me much valuable information relative to the line of questioning.

SWEATING

The human body, like the engine in an automobile, rids itself of excess heat by surface radiation and evaporation of moisture. The sweating that these people complain of is nature's means of maintaining the body temperature at 98.6° in the face of increased heat production. Sweating is abnormally increased both by exercise and excitement.

MUSCULAR SYMPTOMS

Mention has already been made of tremor which is a neuromuscular symptom. Weakness is present in varying degrees, usually dependent upon the severity of the disease. In some cases it is the outstanding feature. As pointed out by Plummer, weakness of the quadriceps muscle is a characteristic symptom of exophthalmic goiter. It is brought to the patient's attention more noticeably in climbing or going down stairs, or in stepping up into a street car. Often the patient has to pull herself up. There is also an abnormal softness of the muscles. Pathologically there is fatty degeneration of the muscle fibers. This accounts for the frequent early dilatation of the heart in these people, whose muscles have become so soft and flabby.

DISTURBANCES OF SLEEP

Many complain of insomnia. They are restless in bed and complain of bad dreams and nightmares, a fertile field for the psychoanalyst.

SKIN CHANGES

Flushing of the skin is frequent in exophthalmic goiter, less so in adenoma. It is a vasomotor response and has a double protective function. It is due to surface capillary dilatation and serves to lessen the intraarterial tension of an accelerated circulation, also to bring a larger volume of blood to the surface for heat radiation. Itching of the skin and a diffuse rash are occasionally encountered in the more active types of exophthalmic goiter, probably toxic in origin.

Increased pigmentation occurs in both diseases, but is seldom complained of by the patient. It is likely to be diffuse in exophthalmic goiter and localized around the neck in adenoma.

CHANGES IN THE VOICE

Changes in the voice develop from one of three causes. In those patients not operated upon they occur in my experience most frequently in exophthalmic goiter. The voice in these cases is weaker and slightly more coarse. The patients state that it is weak and that they have a tickling sensation in the throat. They are constantly clearing the throat on account of excess mucus. I have seen no paralysis of a vocal cord in an unoperated exophthalmic goiter. The voice changes have occurred in patients with very hard glands, also very active glands, as the two are frequently associated. The voice changes in these cases are largely due to congestive disturbances of the mucosa of the trachea and larynx. They disappear when the goiter is removed.

Next in frequency of voice changes are those due to paralysis of one recurrent nerve. Just about 50 per cent of the patients who have consulted me for recurrence following operations have given a history of temporary loss of the voice for periods ranging from two to eight months thereafter. Almost invariably these cases have had a partial or complete paralysis of one vocal cord. Often one can get a clue to vocal cord paralysis by asking the patient to say "E-eee" in a high pitched voice. Frequently they cannot do it.

A majority of recurrences have been unilateral and have occurred on the same side as the functioning vocal cord, a most important point when considering further operative treatment. Vocal cord paralyses have occurred in untreated cases but in only one has a complete cord paralysis existed. Voice changes due to tracheal pressure and narrowing of the trachea have occurred in a considerable number of the larger adenomata and in a fairly high percentage of substernal and intrathoracic goiters.

CHOKING OR PRESSURE SENSATIONS

Choking and pressure sensations have been complained of in about 10 to 20 per cent of the cases. They, too, have occurred in a much greater relative percentage of substernal goiters. In cervical goiters choking and pressure have had little or no constant relation to the size of the goiter. These symptoms have been present in simple colloid goiter about as frequently as in toxic goiter.

DYSPHAGIA

Difficult swallowing has been complained of in all types of goiter, but not very frequently is it the chief complaint. When it has occurred as such, the causative lesion has as a rule been in the esophagus and of the nature of stricture, cardiospasm or malignancy. Fluoroscopic examination with barium meal should be made in all cases with such a history.

DYSPNEA

Two classes of difficult breathing have occurred. One, a shortness of breath on exertion, is of cardiac origin. It may mean cardiac damage or an overworked heart. The other, a pressure dyspnea, is encountered in adenomata and malignancies and is due to narrowing of the lumen of the trachea. The sounds made by these patients on coughing and deep inspiration are pathognomonic.

MUCUS IN THE THROAT

In the literature I have seen no mention of an increase of mucus as a symptom of toxic goiter, but a large percentage of patients have it. The usual history is that it began simultaneously with the onset of other symptoms.

HEADACHE

Headaches have occurred in about 50 per cent of the cases, and though I have no explanation for its cause, it has been characteristic in type, namely, that it is usually occipital and associated with an aching pain in the back of the neck. Historically the goiter headaches are rather distinct, in that they give a definite or approximate date of onset. Others who had previously suffered from headaches name a date on which they became worse, and since which they have been more frequent and more severe. The relief of headache following removal of the goiter has been striking, it being the only pain complained of in these cases.

EYE SYMPTOMS

One might think that the displacements of the eyeball, the disturbances of the ocular muscles and the abnormal relationship of the eye to the lids would constitute one of the very disturbing phases of the disease, but such has not been the case. A surprising degree of exophthalmos often exists without the patient being aware of it. The symptoms complained of are, as a rule, a burning and irritating feeling in the eyes and that they tire easily from reading. Quite a number have commented on a sensation as if something were pushing the eyeball outward. A few of the more advanced cases have developed squints and double vision, due to disproportionate weakness of the ocular muscles.

THE GOITER

As stated earlier, few symptoms are referrable to the neck. A relatively small percentage of the patients have noted the simultaneous appearance of their symptoms with the appearance of a goiter. Those who have made such an observation have, as a rule, had exophthalmic goiters. A relatively large percentage of exophthalmic goiter patients have noted indefinite changes in the gland, among which are increases in size and hardness of the goiter, others increased pressure. The changes in adenomata that are associated with changes in function on the whole have attracted less attention. They have existed for years as a rule, the patients having become accustomed to them. The local changes in circulation, vascularity, etc., do not occur so quickly nor so extensively as in exophthalmic goiter and are, therefore, less noticeable. If an adenomatous goiter suddenly and continuously begins to grow in a person past thirty-five years of age, it usually means the beginning of hyperfunction.

GYNECOLOGIC DISTURBANCE

Insofar as I have been able to determine, there has been no rhyme nor reason in the responses of the female reproductive functions to the effects of toxic goiter. The following gynecologic symptoms have been repeatedly encountered. Amenorrhea. One woman, aged 22, did not menstruate for fifteen months. This symptom developed shortly after an unusually severe exophthalmic goiter. Several had amenorrhea for periods varying from three to eight months. Others have had menorrhagia and metrorrhagia. All symptoms have been exaggerated at menstruation in some, in others being unaffected. The tendency for toxic goiter to deevlop at or about the menopause is well known.

CONCLUSION

No one symptom is infallible as a diagnostic criterion. One must get a mental picture of the altered physiologic responses to the presence of toxic goiter, and with a knowledge of the possible resultant symptoms, one can in any given case of toxic goiter build up a picture that will fairly accurately fit the disease.

Citric Acid Metabolism as Indicated by Urinary Examination. In order to study the effect of ingestion of large amounts of organic fruit acid, E. B. Woods, St. Louis (Journal A. M. A., Jan. 15, 1927), fed citric acid under varying conditions to hogs. As it was difficult to obtain sufficient amounts of citric acid through fruits, citric acid was fed direct, mixed with the weighed ration, and the urine was collected from a metabolism cage, and analyzed. Quantitative determinations were run regularly for free acid, organic acid, phosphorus, ammonia, total nitrogen, acetone, citric acid and calcium, and from these the metabolism of the animal was judged. In this experimentation the object was to determine, first, the reaction of the animal to the citric ion (combined with sodium), and then to determine the reaction of the animal to free organic acid, trying if possible to reach a point at which the ingestion would produce an increased acidity of the urine as suggested by the work of Blatherwick and Long. It was found that as long as the increase was gradual the animal was able to develop a tolerance (whatever this may be) which prevented the urinary acid excretion from increasing. When increased rapidly, a so-called flushing point was reached, in which the urine began to increase in acidity; this occurred, however, only after large amounts were given. When this point had been arrived at, the animal was returned to a normal diet for two weeks to determine whether this would change its degree of tolerance or oxidative power. It was found that this tolerance was lasting, and while the urinary acidity was increased when excessive amounts of acid were fed, the excretion of actual citric acid did not increase; in fact, it was comparatively very low. By the use of mixtures of sodium citrate with citric acid, the antiacid effect of fruits containing mixtures of this kind is corroborated for all reasonable quantities of intake, even when the fruit carries an appreciable percentage of free acid.

SECTION ON PATHOLOGY

PATHOLOGY OF MALIGNANT TUMORS

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PERIOSTEAL SARCOMA

Case 1. *Clinical History.* The patient was a girl, aged 9, who three months before admission to the hospital had a dull ache in the lower left leg after exercise. The pain gradually increased, and became so severe that she had to take codeine to sleep. An x-ray picture of the left leg, taken three weeks before amputation, showed a small area of new bone formation. One week before operation an x-ray picture of the chest showed some peribroncheal thickening. However, two years ago the child had been kept out of school for several months because it was thought she had a lesion of the lungs, though tubercle bacilli were not found.

Examination. There was a slight atrophy of the skin below the left knee. The area of fullness was painful to pressure.

Operation. An exploratory incision showed the tumor in the leg to be made up of soft, grayish, opaque cellular tissue. Immediate amputation was done.

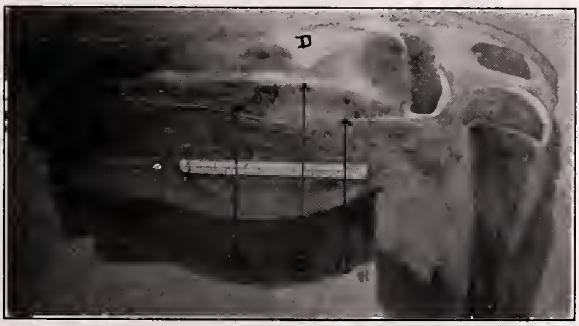


Fig. 1 (Case 1). The leg has been split anteroposteriorly. At A the tumor has penetrated the periosteum. B shows the cortical bone separating the medullary cavity from the tumor. C. shows the periosteum separated from the cortical bone by tumor tissue. The density of the x-ray shadow is due to the mass of bone shown at D.

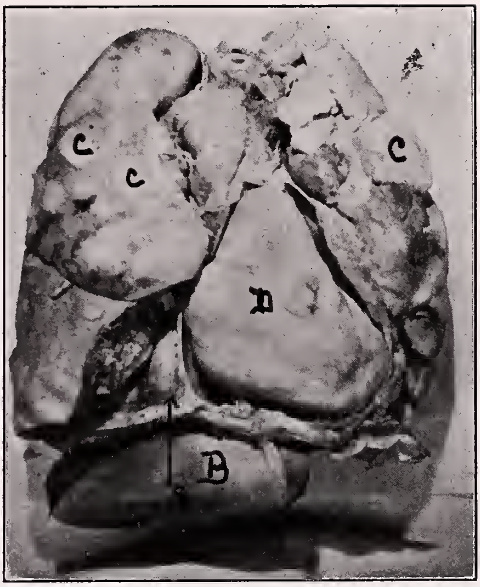


Fig. 2. A photograph of the heart and the lungs with the anterior pericardial wall removed. A shows a mediastinal mass which has perforated the right side of the pericardium, the diaphragm and extended into the liver, B. C shows metastatic tumor nodules in the lung tissue. D shows the heart.

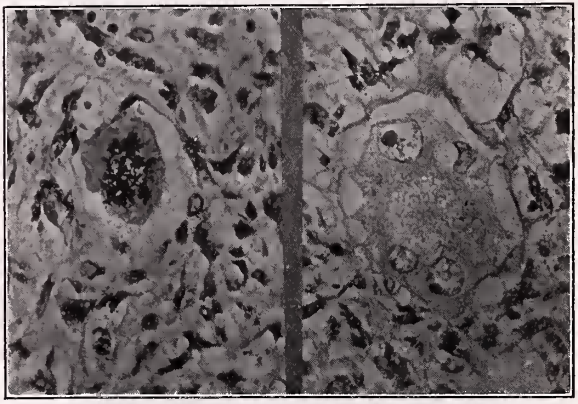


Fig. 3. Fig. 4.

Figs. 3 and 4 show the giant cells from a metastatic nodule from the lung.

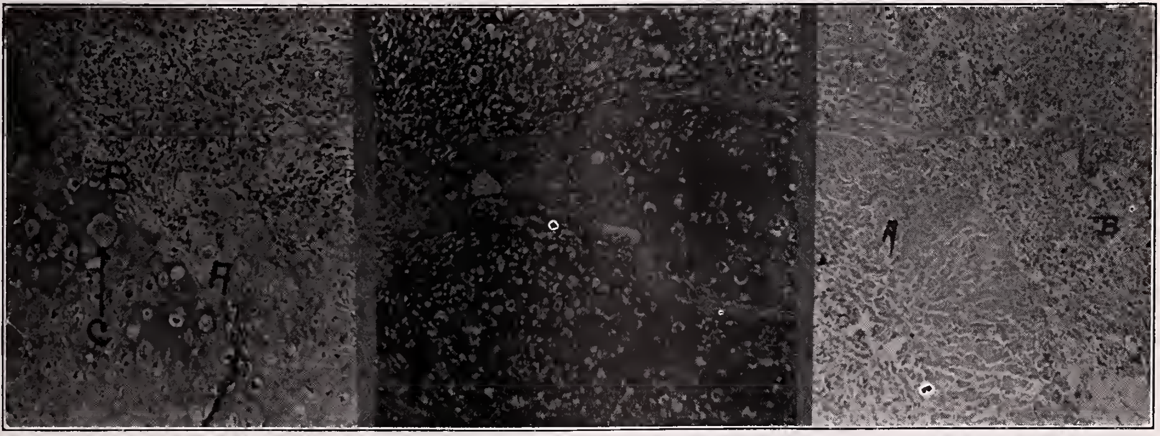


Fig. 5. Fig. 6. Fig. 7.

Fig. 5. At A the cartilage cells have broken through a fibrous tissue septum, B. C shows moderately large tumor cells. This nodule was taken from the groin.

Fig. 6. Shows a band of fibrous tissue, A, ending in a mass of cartilage cells, B.

Fig. 8. The liver tissue at A is being invaded by tumor cells, B.

Autopsy showed a mass three centimeters in diameter in the retroperitoneal tissues in the true pelvis. The lungs were studded with tumor masses, many containing bone. One large mediastinal mass had grown into the right pericadial wall, had also penetrated the diaphragm and extended into the liver. No other metastasis found.

CHONDROSARCOMA OF THE NASAL CAVITY

Case 2. *Clinical History.* About two years before death, the patient, aged 38, developed a gradually increasing optic atrophy, which resulted in complete blindness. She was treated for syphilis, however, without signs of the disease. Four months before her death the tumor began to deform the left side of the face and nose.

Autopsy. The autopsy showed the left lateral portion of the body and part of the small wing of the left sphenoid and the posterior portion of the orbital plate of the left parietal bone replaced by a bluish grey, semitranslucent, irregularly lobulated tumor. The left anterior, middle and posterior clinoid processes had been eroded by tumor tissue.

The microscopic section shows loosely arranged groups of tumor cells, separated from each other by delicate bands of myxomatous and fibrous tissue. The cells were markedly irregular in shape and size. In some areas typical cartilage cells are present, while other areas show fibrous tissue.

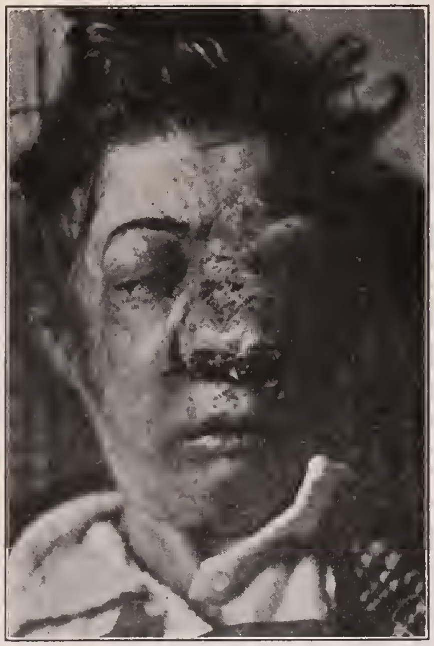


Fig. 1 (Case 2). The photograph shows the deformity of the face due to the tumor filling the nasal cavity. Patient was blind April, 1920. Died May 5, 1921.

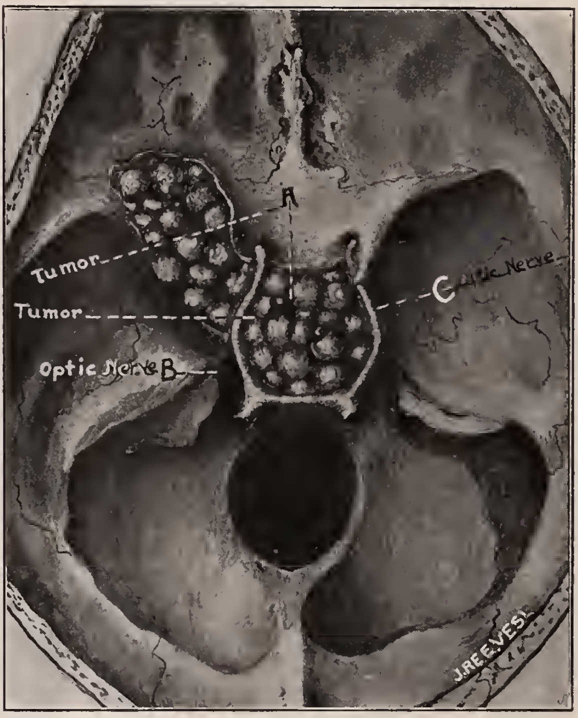


Fig. 2. The schematic drawing shows the tumor, A, perforating the left sphenoid and separating the atrophic optic nerves, B and C.

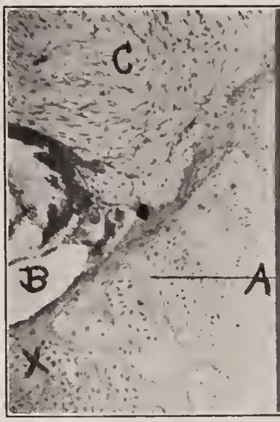


Fig. 3.

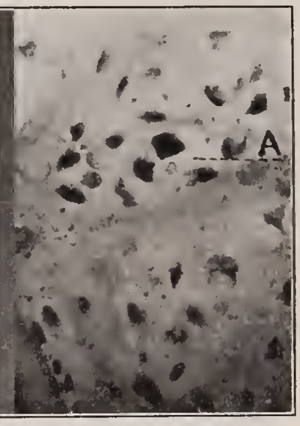


Fig. 4.

Fig. 3. Low power. At A myxomatous tissue separates strands of cartilage cells. B is a large blood vessel. At C the type of tumor changes to an edematous fibrous tissue. X is area of figure 4.

Fig. 4. High power. A shows the cartilage cells with large irregular nuclei and clear spaces of cytoplasm.

Barbital as Preventive of Cocaine Toxicosis. For a number of years John Leshure, New York (Journal A. M. A., Jan. 15, 1927), has administered to all patients requiring operation under local anesthesia morphine either alone or in combination with atropine or scopolamine. In spite of this precaution, a considerable number of these patients have exhibited symptoms of poisoning, such as pale, cold, clammy skin, rapid and feeble heart action, and convulsive tremors. During the last year he has substituted for these drugs diethyl barbituric acid (barbital) or its sodium salt (sodium barbital), with the result that none of the 100 patients so treated have manifested any of the symptoms mentioned above, and the natural inference is that barbital is an efficient antidote to cocaine, procain and hydrochloride and other similar drugs used to induce local anesthesia. It has not been found necessary in average cases to use the intravenous method. Leshure administers from 6 to 12 grains (0.4 to 0.8 Gm.) of sodium barbital by mouth at least one-half hour before inducing anesthesia. This is best given in 3 grain (0.2 Gm.) capsules followed by a glass of water to hasten absorption, and the dose is regulated by such factors as age, and body weight. Clinically, barbital alone appears to be as efficacious as when combined with paraldehyde, although for intravenous use the latter drug would be of considerable value.

SARCOMA OF THE BREAST

Case 3. *Clinical History.* The patient, a woman, aged 60, came to the hospital with a large cystic right breast. Twenty-five years ago she had had a tumor about the "size of a fist," removed from the breast with arsenic paste. One and one-half years ago the breast began to enlarge and three months ago it began rapidly to increase in size. While standing the tumor would become cyanotic. Because of its size and weight it markedly interfered with her work. There has been no loss in weight. The breast was movable on the chest wall. In the area of the scar made by the arsenic paste there was a hard mass about 3 centimeters in diameter, while the remainder of the mass was tense though fluctuant. There was neither ulceration of the skin nor palpable masses in the axilla.

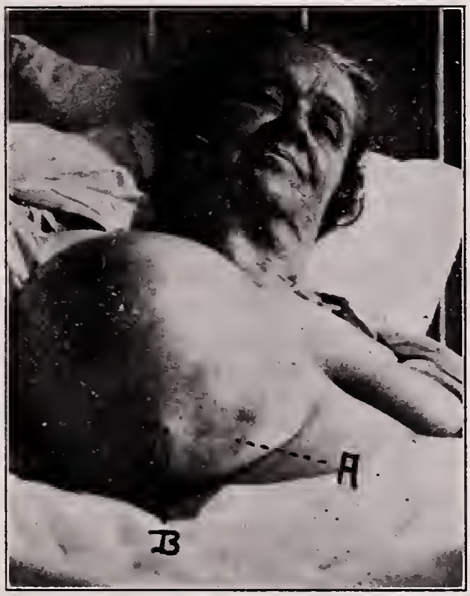


Fig. 1. (Case 3). Shows the relative size of the tumor. A is the region of the scar formed by the paste, twenty-five years ago. B is the nipple region.

Gross Tissue Examination. The cystic area contained about three pints of blood-stained fluid. A hard, greyish, white, opaque nodular mass, two centimeters in diameter, was attached to the scar tissue area.

Microscopic Section showed the tumor to contain small irregular cells made up of little or no cytoplasm and with deeply staining irregular nuclei. Some areas showed dense fibrous tissue bands separating the tumor cells. The blood vessels had definite walls.

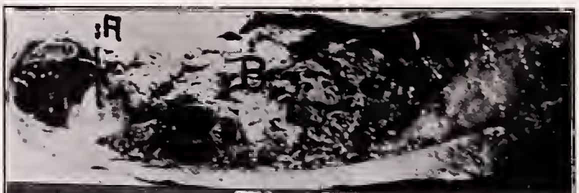
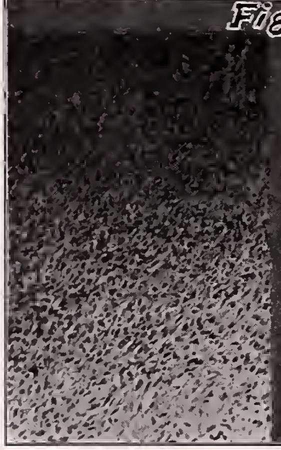


Fig. 2



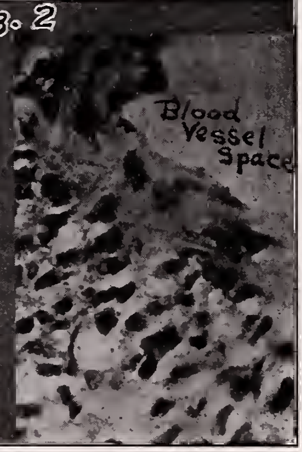


Fig. 3. Fig. 4.

Fig. 2. A cross section made through the cystic tumor shows at A the solid sarcomatous tissue attached to the old scar. B shows the friable blood clot in the cystic cavity.

Fig. 3. Low power. The section shows the tumor cells with irregular nuclei. The blood spaces are small.

Fig. 4. High power. The blood vessel space is surrounded by irregular tumor cells.

CYSTOMETRIC DETERMINATION OF BLADDER PRESSURE. Starting with the well-known anatomic fact that the bladder wall and its internal sphincter are chiefly in control of the sympathetics and parasympathetics, D. K. Rose, St. Louis (Journal A. M. A., Jan. 15, 1927), made measurements of intracystic pressure, with known quantities of fluid, for the purpose of throwing some light, not only on the question of whether or not a given case of incontinence is neurogenic in origin, but also on the question as to which set of nerves is chiefly involved. Further, by noting bladder sensations with the varying intracystic pressures and the associated amounts of fluid, it was hoped that quite exact data as to the strength and sensibility of the wall might be obtained, which would be of great value in many pathologic bladder conditions. The results have borne out the theory that such observations will enable one often to diagnose with accuracy the condition present even when other methods of diagnosis fail. Such determinations must embrace three fundamentals: (1) a transportable instrument of simple and accurate mechanism; (2) an understanding of the antomy, and the physiologic and pathologic bladder phenomena, and (3) a constant simple method of recording results, the interpretation of which, based on variation from the normal, will give the desired information. In order to test out the diagnostic possibilities of measurements of intracystic pressure, based on the foregoing theoretical considerations, Rose has an instrument called a cystometer. It consists of a 15 cc. syringe encased in a box, operable either by hand or by foot, which, by means of a two-way valve, can force a more or less steady stream of fluid through either a catheter or a cystoscope, with each cubic centimeter of such fluid being recorded within view as the intracystic pressure is simultaneously recorded. The information obtainable, therefore, is the exact intracystic pressure as the bladder is being filled, from the first cubic centimeter to full capacity. The pressure is measured in millimeters of mercury, and the result is registered as a curve between millimeters of mercury and cubic centimeters of fluid. As the intracystic pressure oscillates within considerable range, one constant point of reading must be used, namely, the highest pressure for each 1, 10, 25 or 50 cc. of fluid, and the type of oscillation explained in each case; i. e., whether influenced by a psychic, muscular or nerve factor. The emptying pressure is obtained by connecting the pressure gauge abruptly with the cystoscope or catheter at different phases of the emptying bladder. The normal musculature, if suddenly blocked in its contraction, will register from 50 to 70 mm., of mercury, provided the organ is well filled; as it lowers in fluid content, the pressure lowers.

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EDITORIAL

OBSTETRICS, THE GENERAL PRACTITIONER, DOLLARS

It has been stated that 16,000 women in the United States die in childbed every year, or .36 to .49 per cent mortality. That is, one woman dies in every two hundred confinement cases. Therefore, it is only four times as dangerous to have a major operation as it is to have a baby. Truly science has made more advances in the care of pathologic conditions on the one hand than with the so-called normal function on the other. There are three main immediate causes of mortality in parturition, toxemia, hemorrhage and spesis. The majority of pregnant women are taken care of by general practitioners and, when it is remembered that these three causes of mortality are largely preventable, it would seem we must continually bring home to the general practitioner the fact that he is responsible to a large extent for this mortality.

Startling as this statement is, a little thought will show that the condition is an economic one in its final analysis. It has been stated that in the large cities only two classes of people get adequate treatment, the very rich and the very poor. The great so-called middle class, who make up the bulk of medical practice, go to the family physician for their obstetric care because they can and expect to pay a fee for the service rendered. This fee has become very moderate and out of proportion to fees in other lines of medical practice. The family physician, knowing that the fee is small and more or less fixed, consciously or unconsciously reserves the time he can afford for this price as limited as possible, hoping that the so-called normal function of reproduction will go on normally. He tells the woman to send in her urine once a month, and after one or two examinations if they are all right, the well known "sink test" only is often applied. He pays little attention to the blood pressure readings and practically none to those symptoms and signs which, if sought for, will indicate the approach or the beginning of toxemia, at the time when something can be done for it. Instead, he commiserates with the relatives, when the poor woman is in convulsions, telling them that she has probably worked too hard. He tells the nurse or the hospital not to call him until they can see the baby's head. Whereupon he arrives hurriedly, delivers the baby, expresses the placenta, not realizing how exhausted the uterine muscle may be, or he gives an anesthetic and puts in sutures before the uterus is contracted, exposing the woman to hemorrhage and then wondering at the occasional death in the delivery room or at the protracted convalescence. Then he makes vaginal examinations instead of rectal, takes almost no precaution to have sterile surroundings in making perineal repairs, doing things that he would not in a surgical case and then is surprised to learn that 61 per cent of the deaths due to sepsis at childbirth follow operative procedures.

So it is our duty to call to the attention of the general practitioner this mortality in childbed and to reiterate that it is largely preventable and he is responsible for it. If he cannot give adequate time and knowledge for the present fees, he should not take these cases. Also, it is likewise incumbent on us to bring to the attention of pregnant women that one in two hundred of their number need not die in confinement and that in our day and generation the process of pregnancy and confinement is not to be left to nature but requires constant intelligent care. When both the practitioner and the patient come to realize the amount of care and knowledge necessary for a successful handling of the obstetric case, it will then be possible to advance the fee to a nearer approximation to adequate compensation for the service which must be rendered, if this death of one in two hundred in parturition is to be lowered.

W. C. W.

ENTERTAINMENT OF VISITING PHYSICIANS

During recent years systematic efforts have been put forth by commercial and industrial organizations for the reception and entertainment of tourists and visitors from the East, in order that they may become acquainted with the resources and attractions of this Northwest section of our country. Such efforts result in satisfactory and desirable results, both for local residents and strangers that visit us. At times it has seemed that the local medical profession might well emulate this example and thus bring to attention of medical visitors the existing status of medical affairs in our cities, and demonstrate the fact that our physicians and surgeons, though practicing far distant from the medical centers of our land, yet comprise an up-to-date body of professional men and women, capable of meeting and negotiating any medical and surgical situations which may arise.

The first problem confronting one is how to make contact with these medical visitors and impart to them this sort of information. An illustration of action along this line is presented by King County Medical Society in Seattle, which has appointed a Committee on Visiting Physicians, whose function will be to cope with this problem and attempt to obtain results. It is purposed through the various hotel officials to get in touch with the visiting physicians and give them an opportunity by means of the society's central telephone station to communicate with this committee, who will take charge of them while in the city and in a hospitable manner present to them whatever the medical profession has to offer in the different lines of medical and surgical activity. It is believed an effort of the sort will benefit the profession in any of our cities by bringing them in touch with medical leaders from other sections who may be visiting cities of the Northwest, as well as conferring reciprocating favors on the strangers among us.

EXAMPLE OF MEDICAL COOPERATION

It is often stated that physicians, as a body of professional men and women, fail to accomplish results of which they are capable through failure of cooperation and unity of purpose. In view of this wide-spread opinion, it is gratifying to observe a practical result of cooperative endeavor which has recently occurred in Portland. A commercial telephone exchange has existed for some time in that city for the purpose of keeping doctors and patients in touch outside of business hours. For this service a charge has been made of $4.75 per month. Late in November the subscribers were notified this charge would be raised to $10.00 when the next issue of the telephone directory was published.

Believing that this was a gross imposition on the profession, Portland City and County Medical Society appointed a committee to take the matter in hand. In little over a week's time they obtained the signatures of over two hundred physicians and dentists, who will comprise a telephone service for the medical and dental professions at a cost of $3.00 per month, with the assurance of a reduction in the near future. It is stated that similar service is rendered in some of the eastern cities at two-thirds this monthly rate. The service is incorporated under the title, The Medical Society Telephone Service, Inc., whose officers are members of the medical society.

ADOPTION OF THE METRIC SYSTEM

For many years official adoption of the metric standard of weights and measures has been under consideration by our Government officials. The advantage of uniformity in international commercial relations will be accepted without argument. More than forty leading nations in the world have adopted the metric system, the United States and the British Commonwealths having thus far failed in its adoption. The situation is further complicated between these two nations, owing to the fact that, while they employ the same terms of measures and weights, these differ materially in their relative capacities. Beginning with this year, the advocates of decimal metric weights and measures for the United States have organized for an energetic campaign. They represent many leading scientific organizations, as well as prominent scientists. Several state legislatures have already petitioned Congress to adopt the metric standards. Hitherto the inertia of conservatism has blocked the matter in Congress. It is stated that a recent canvas of both Houses indicates an almost certain majority for metric adoption.

This question has a vital and personal relation to the medical profession. It is well known that a large number of the most advanced and progressive representatives among us have long employed the metric system, and have advocated its universal adoption by the general profession. This result would necessarily follow the passage of this measure by Congress and its subsequent employment by the departments of the Government. While its general acceptance by the medical profession might be delayed on part of older physicians now in practice, it would take but a few years to establish its universal use.

A SURGICAL SOCIETY ISSUE

An innovation has been adopted in the present issue of this journal which has been assigned for the publication exclusively of papers prepared by members of the Seattle Surgical Society. The purpose is not to give publicity to a particular group of practitioners, but to afford expression to the scientific efforts of an earnest body of workers in their community. Neither is it intended to limit such expression to this one society of professional men. If like organizations in other cities of the Northwest present the desire for a similar outlet for their scientific literary productions, the management of this journal will be pleased to consider such publications at future dates.

MEDICAL NOTES

OREGON

Urge New Medical Code. The Oregon State Medical Society through its executive secretary, Mr. Clyde C. Foley, has prepared a new state medical code which will be submitted to the State legislature during its coming session. The existing medical practice act has been in effect since 1895. Its chief weakness is that it does not adequately define the practice of medicine and it provides no funds for enforcement. The proposed law will be in keeping with the demands of modern medical practice. Funds for enforcement will be provided by a five dollar annual registration fee for licensed physicians.

Hospital is Beneficiary. The $22,000 estate of the late Mr. Gerome Morley is to go to the Silverton hospital, as requested in his will. The will was recently contested in court but was upheld by the presiding judge.

Grants Pass Plans Hospital. At a recent meeting of the Chamber of Commerce and local physicians of Grants Pass, the need for adequate hospital facilities in that community was pointed out. At the present time the existing institution is unable to provide for many patients seeking admission.

The Dalles to Have State Sanatorium. It has been definitely decided that the new Eastern Oregon Tuberculosis Sanatorium will be located at The Dalles.

Enlarge Salem Hospital. Construction of a new wing is now in progress at the Salem General Hospital which, when completed, will provide facilities for thirty-four additional patients.

New Maternity Ward. The old building of the Emanuel hospital, Portland, has been thoroughly remodeled and equipped for obstetric purposes. Sixty patients can be cared for in the new department.

Health Board Elects Officers. At a meeting of the Oregon State Board of Health, held in Salem January 11, Dr. W. B. Morse was elected president and Dr. Frederick Stricker, secretary. The board approved of proposed legislative bill providing for a state department of sanitary engineering.

Lane County Medical Society has elected the following officers for 1927: President, Dr. G. I. Hurley; Eugene; vice-president, Dr. D. C. Standard, Eugene; secretary-treasurer, Dr. L. S. Kent, Eugene.

Dr. Robert V. Baker, formerly of Los Angeles, has located for practice in Albany in association with Drs. Dean Crowell and H. P. Nottage.

Dr. Jerald S. Backstrand has opened an office at Salem, where he will specialize in pediatrics.

Medical Wedding. Dr. Harry C. Blair and Mrs. Verna Barker Fithian, of Portland, were married January 1.

N. W. Jones Lectures. Under the auspices of University of Oregon Medical School the N. W. Jones lectures were delivered in Portland Jan. 12-14. The lecturers were Drs. Martin H. Fischer, of University of Cincinnati, and E. C. Rosenow, of the Mayo Foundation.

WASHINGTON

Hospital Heads Meet. The Northwest Hospital Association held its annual meeting at Seattle, January 3-4.. Among others Dr. Malcolm T. MacEachern of Chicago, associate director of the American College of Surgeons, addressed the convention.

Hospital Fire Fatal. In a fire which January 11 totally destroyed the Valley Hospital at Valley, managed by Dr. W. A. Cartwright, Miss Charlotte Ames, a nurse, was entrapped and burned to death. Mrs. S. A. Bussard, a cook, jumped from a third story window and died later of burns and shock.

Addition to Hospital for Insane. A three-story brick and reinforced concrete wing has been completed at the State Hospital for the Insane at Fort Steilacoom. Its completion marks the first step in the replacement of the present buildings by fireproof structures.

St. Joseph's Hospital to be Enlarged. Plans have been announced for the construction at any early date of a $100,000 addition to the St. Joseph's hospital, Bellingham. The new structure will be named the Compton pavilion, in memory of the late Dr. H. C. Compton of Bellingham.

Endows Hospital Bed. Dr. Hugh C. Wallace of Tacoma, former ambassador to France, has given $10,000 to the Tacoma General Hospital. The gift is for the purpose of endowing a bed in memory of his son.

Health Officer Defies Removal. Although summarily dismissed from his position as county health officer by the board of commissioners of King County, Dr. George Sparling, January 12, secured a court order directing that he be continued in office. Dr. Sparling alleges that his contract does not expire until July, 1927.

Physicians Aid Recall. Groups of physicians in King and Pierce counties have formed organizations to aid in the movement to recall Gov. Roland H. Hartley. The Snohomish County Medical Society, January 4, adopted a resolution in which it was stated that the society was not supporting the recall movement.

Elected Mayor. Dr. F. W. Anderson, of South Bend, has been installed mayor of that city, to which he was elected at the fall city election. Besides being a well known practitioner of that city, he was major in the World War and is Lt. Col. in the reserve.

Joins Sanatorium Staff. Dr. J. M. Odell, formerly of the Edgecliff Sanatorium, Spokane, has been made assistant director and resident physician at the Mountain View Sanatorium, Pierce county.

Annual Library Meeting. The annual meeting of Washington Medical Library Association was held at Seattle, Jan. 11. Reports showed about 7500 bound volumes in the library and 125 weekly and monthly journals. Drs. G. G. Thompson, C. A. Warhanik and H. C. Olmsted were elected to the Board of Trustees. The following officers were elected for the ensuing year: President, W. S. Griswold; vice-president, C. A. Smith; secretary-treasurer, C. A. Warhanik.

Examiner of Aviation. Dr. E. E. Langly, of Spokane, captain and flight surgeon of the 116th observation squadron, National Guard, has been appointed by the United States Department of Commerce to the position of medical examiner of aviators in the Spokane district.

Spokane County Medical Society has elected the following officers for 1927: President, Dr. Mitchell Langworthy; vice-president, Dr. P. J. Gallagher; secretary, Dr. R. M. Schulte; treasurer, Dr. R. N. Hamblin, all of Spokane.

Cowlitz County Medical Society has elected the following for 1927 officers: President, Dr. J. F. Christiensen; vice-president, Dr. J. F. Barton; secretary-treasurer, Dr. J. A. Darby, all of Kelso.

The Seattle Obstetrical and Gynecological Society held a symposium January 18, on the subject, "Tuberculosis in Relation to Obstetrics." Several invited guests took part in the discussion. Officers for 1927 were elected as follows: President, Dr. Torleif Torland; vice-president, Dr. J. R. McCurdy; secretary-treasurer, Dr. W. M. O'Shea.

Dr. Virgil Hancock, Seattle, has been made president of the Children's Farm Home at Lacey, near Olympia.

Dr. F. A. Frank has been reappointed county physician of Snohomish county.

Dr. J. A. Darby, of Longview, will continue to serve for another year as county physician of Cowlitz county.

Dr. E. G. Longley, a graduate of the University of Iowa School of Medicine, and formerly an intern at Deaconess Hospital, Spokane, has located for practice at Bremerton.

Dr. A. E. Linkletter, of Vancouver, B. C., has become associated in practice with Dr. F. L. Neely at Shelton.

Dr. Frank Rose, Spokane, recently underwent an operation at the St. Luke's hospital, Spokane.

Dr. George W. Wimberly, of Toppenish, is recovering from an operation which was performed in January at St. Elizabeth's hospital, Yakima.

Dr. Arthur E. Burns, of Seattle, has returned after two years of travel and study in Europe. Much of the time was spent in Vienna.

Medical Weddings. Dr. Raymond C. Morse, of Puyallup, and Miss Bessie Satterwaite, of Olympia, were married December 29. Dr. Hugh M. French, of Prosser, and Miss Clara May Calkins, of Mt. Vernon, were married last Thanksgiving Day. Dr. Carl Burdick, of Kent, and Miss Florence C. Hofmeister were married January 1.

IDAHO

Noted Orthopedist Visits Boise. Dr. Melvin S. Henderson, chief of the orthopedic division of the Mayo Institute, Rochester, Minn., was guest of honor at a banquet given by the Boise City Medical Society December 28. Under the auspices of the medical society and Rotary Club he held a clinic for crippled children.

State Sanatorium Overcrowded. In his biennial report to the state commissioners of public welfare, Dr. D'Orr Paynter has pointed out the fact that increased facilities for the care of patients are urgently needed at the Idaho State Sanatorium at Nampa.

Joins Veterans' Hospital. Dr. W. H. Titus, of Boise, who has been serving as part time operating surgeon at the United States Veterans' Hospital at Boise, has been appointed full time chief of the surgical service at that institution. Dr. William Van Patten has been transferred to the Tacoma, Wash., Veterans' Hospital.

Dr. C. E. Landquist, of Orofino, is recovering from an illness at the Hot Lake Sanatorium, Hot Lake, Ore.

Appointed County Health Officers. The following have been appointed county physicians in Idaho: Dr. J. R. Bean, of Wallace, Shoshone county; Dr. J. R. Young of Pocatello, Bannock county; Dr. J. M. Lyle, Lewiston, Nez Perce county; Dr. W. T. Drysdale, New Plymouth, Payette county.

OBITUARIES

Dr. George M. Wells, of Portland, Ore., died at the home of his daughter December 27, aged 89 years. He was born in Virginia in 1837, and served in the Confederate army during the Civil War. He was a graduate of the Medical College of Virginia, Richmond, in the class of 1866. He practiced in Portland from 1886 until his retirement. For many years he was connected with the department of pediatrics at the University of Oregon Medical School.

Dr. Henry A. Canfield, of North Bend, Ore., succumbed to a brief illness at a local hospital January 1, aged 39 years. He was born in Watkins, N. Y., in 1898, and spent his youth in Seattle, Wash. He graduated from the University of Oregon Medical School in 1911. Prior to locating at North Bend in 1923, he had for several years practiced at Drain, Ore.

Dr. Carlo Visettl, of Portland, Ore., died at his home December 28, following a short illness. He was born in Turin, Italy, in 1871, and graduated from the University of Turin Medical School in 1899. He had practiced for twenty years in Portland. At one time he was consular agent for Italy at Portland.

Dr. Barclay T. Trueblood, of Kirkland, Wash., died at his home January 5, aged 80 years. He was born at Salem, Indiana, in 1848. He was at one time professor of natural sciences at Penn College. Later he studied medicine at the University of Iowa, graduating in 1885. He practiced in Kansas and Nebraska for a number of years before moving to Washington, in 1906. He is survived by a son, Dr. Donald V. Trueblood of Seattle.

Dr. Henry Freeborg, of Portland, Ore., died at Livermore, Calif., December 29. He was a graduate of the 1926 class at the University of Oregon Medical School.

Dr. Francis E. Dent, of Seattle, Wash., died at a local hospital January 1, following a brief illness, aged 50 years. He was born in Minnesota in 1877, and graduated from Rush Medical College, Chicago, in 1903. He came West in 1905 and, with the exception of six years spent at Sequim, Wash., he had practiced continuously in Seattle. He was active in the White Cross Society for the suppression of narcotics.

Dr. Richard T. Burke, of Snoqualmie Falls, Wash., died January 1, aged 46 years. His death followed several weeks after an injury sustained by the accidental discharge of a revolver. He was born in 1880, and graduated from the College of Physicians and Surgeons, San Francisco, in 1908. He was a veteran of the Spanish and of the World War.

Dr. Armin Fischer, of Spokane, Wash., died suddenly of meningitis at St. Luke's Hospital, Spokane, January 16, aged 31 years. He was born in Minnesota in 1895, and graduated from the St. Louis University School of Medicine in 1920. He came to Spokane in 1920 to serve an internship at the Sacred Heart Hospital, following which he located permanently for practice in that city.

Dr. Carl P. Getzlaff, Priest River, Idaho, died at the Deaconess Hospital, Spokane, Wash., January 5, aged 39 years, following a lingering illness. He was born at Good Thunder, Minn., in 1888, and graduated from California Electic Medical College in 1914. He practiced for a number of years at Toledo, Wash., before locating at Priest River in 1918. He is survived by a brother, Dr. E. E. Getzlaff, of Priest River.

Dr. John H. Brodrecht, of Spokane, Wash., died at Sacred Heart Hospital at Spokane on Jan. 23, aged 48 years, following a brief illness. He was born at Strathray, Ont., in 1879, and graduated from the University of Toronto Medical School in 1905. He later received a degree from the Royal College of Surgeons, London, Eng. He had practiced in Ontario and in the Copper River region in Alaska before settling at Spokane in 1911.

Symptom Complex Resembling Hyperthyroidism Without Increased Metabolism. Solomon Strouse and Herbert F. Binswanger, Chicago (Journal A. M. A., Jan. 15, 1927), analyze thirty-two cases which presented the symptom complex closely resembling so-called hyperthyroidism without changes in the basal metabolic rate. This complex has been known for some time under various names, but except for one report made during the course of this study, these patients have not been treated with iodine. The authors believe the results of such treatment justify the opinion that the symptoms and signs of this complex are associated with iodine deficiency. Iodine medication relieved the symptoms but did not affect the basal metabolic rate.

REPORTS OF SOCIETY MEETINGS

AMERICAN COLLEGE OF SURGEONS

MINUTES OF THE ANNUAL MEETING OF AMERICAN COLLEGE OF SURGEONS, MONTREAL, ONTARIO, OCT. 25-30, 1926.

The meetings of the American College of Surgeons, the Clinical Congress and the Gorgas Memorial kept one very busy during the entire week. Not many men from the West were present because of the Cleveland meeting the previous week. Among those present, however, was our friend, A. E. Sommer of Portland, former vice-president of the College and one of the Trustees of the Gorgas Memorial. Dr. Sommer was instrumental in having passed one of the strong resolutions, the Fracture Committee for Standardized Hospitals. Drs. Taylor of Ellensburg, Howe and McCreery of Tacoma, and Houston of Seattle were seen about the lobbies and attending the clinics.

The work of the week was divided, as outlined above, into the clinics which were held in the various hospitals of Montreal, mornings being devoted to general surgery, afternoons to special surgery. Scientific programs were held in the afternoons on general surgery and surgical specialities, while the morning sessions were given over to scientific papers on eye, ear, nose and throat subjects.

Probably the most interesting symposium was that on fractures, held on Friday afternoon. Dr. Charles L. Scudder of Boston was Chairman of the Committee and among the men who presented papers were Allison, Osgood and Cotton of Boston, Blake of New York; Speed and Magnuson of Chicago; Sherman of Pittsburg; Ashhurst of Philadelphia; Mercier, Tees and Keenan of Montreal. The hall was packed that afternoon and it seemed everyone was intensely interested in the subject of fractures, particularly when the leaders of the profession were there to present papers. It was interesting to note that one of the speakers presented the subject of fracture of the femur, stating that he operated on practically all cases, while the next speaker had operated on only three cases in the last fifteen years. However, both have about the same end-results to show. Part of the time of this meeting was given over to Mr. Will Hayes, President of the Motion Picture Producers and Distributors of America, who talked on the future of the motion picture in the teaching of medicine and the presenting of medical problems to the public.

At the morning session, on Wednesday, a symposium was presented on the Standardization of the Ophthalmological and Oto-Laryngological Departments in general hospitals. This symposium was presented by the leaders in these particular subjects. The planning of hospitals was presented by Mr. E. F. Stevens of Boston, one of the leading hospital architects of the country. In reality this symposium was a report by a committee that has been studying the problems of the eye, ear, nose and

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* Read before a Meeting of Seattle Surgical Society, Seattle, Wash., Nov. 26, 1926, by George W. Swift, M.D.

throat specialties in their relation to general surgery, as they pertain to hospital construction and development.

The encroachment of the general surgeon upon the specialist's field, insofar as the nose and throat operations are concerned; the frequency of automobile accidents necessitating nose and throat operations and treatments; the etiologic factors involved in focal infections and the result in general diseases; and the importance that is now being attached by the internists to a thorough eye examination have caused hospital superintendents and architects no little worry in planning this department in the new hospitals. It has now been found in planning the out-patient clinic, for instance, in a modern hospital that the eye, ear, nose and throat department demands at least one-quarter of the entire space. Mr. Stevens showed by lantern slides the relative amount of space given by all of the new hospitals in the East for which he is consultant architect. It was surprising to see to what extent the hospitals are making use of the eye, ear, nose and throat service in general examinations in the out-patient clinic. Perhaps one might say that this symposium was only the beginning of further discussion along these lines, but it showed the tendency of the times in hospital construction and development.

The afternoon session on Wednesday was devoted to a symposium on acute lesions of the abdomen, while in the evening a discussion was given on the gallbladder by Evarts A. Graham of St. Louis, and on plastic surgery of the hand by Kanavel of Chicago, Arthur Stindler of Iowa City, Henry Lyle of New York and Sterling Bunnell of San Francisco. Both of these meetings were well attended and the papers well received.

The evening meeting on Tuesday on the cancer problem was well attended, but did not bring out anything particularly new on the subject of cancer. It would seem to an outside observer that cancer still holds first place, however, in the interest of the profession. This meeting was crowded and everyone was awaiting with expectancy some announcement. There was a feeling in the air that something new might, perhaps, come out at this meeting, but nothing of a startling nature developed.

Among the important addresses delivered at the various meetings was that of the retiring President, Dr. Rudolph Matas of New Orleans, on Surgery and the International Spirit. Dr. Matas' address was very complete, in that he reviewed the history of surgery and showed wherein the spirit that permeates the surgical profession knows no boundaries so far as nationalities are concerned. His eulogy of Murphy, Pasteur and Lister was, perhaps, the most noteworthy part of his address.

The two addresses by the incoming President, Dr. Walter W. Chipman of Montreal, the one on Cancer Prophylaxis and the other the President's address at the convocation were all one would anticipate from such a learned scholar. His diction and the logical sequence of his thoughts made a very favorable impression on everyone. His President's address was an oration on the Life Work of Lister. It was appropriate that Archibald Young of Glasgow and John M. C. Fraser of Edinburgh were present to hear Dr. Chipman deliver this oration. Needless to say, in the descriptive picture of Chipman, Lister stood before us a living human being, so beautifully did Chipman handle his subject.

I was sorry that I was unable to hear the address by Dr. Roberto Alessandri of Rome. The John B. Murphy Oration in Surgery, "Sir William Macewen and the Glasgow School of Surgery" by Young of Glasgow, I shall always remember. Dr. Young has a way in addressing an audience that captivates everyone. His rugged physique, his smiling face and his witty expressions combined force one to listen intently to all he has to say. It was, indeed, a treat to listen to him describe the nurses' operating homes abroad and then contrast the work that the British surgeon must do under adverse circumstances with what he was pleased to term our magnificently equipped operating rooms and hospitals.

The Convocation on Friday night terminated the College activities for the year. Perhaps of the four hundred candidates two hundred were present to receive their degrees. The Convocation was well attended and the foreign guests were presented, each in turn, by one of the American Fellows. Some of them had so many degrees that it became almost ludicrous to hear their various affiliations noted by the American Fellow who was presenting the candidate. One criticism that holds for all of the different meetings in Montreal was the length of the addresses and programs. One became exhausted after listening to two or three papers and would lose the best paper, perhaps, because of leaving before the meeting was over. With this exception the meetings were all that one could wish for.

Turning now to the Conference on Hospital Standardization, one finds several very interesting problems. In the first place, the hospitals of Montreal, representing a total of 5100 general hospital beds and 4100 beds for the insane and psychiatric cases, representing 20 hospitals of various denominations, have organized what is known as the Montreal Hospital Council. It corresponds in a way to the Central Standardization Committee of Seattle. This Council put out a little book, a copy of which I shall pass around, giving the points of interest regarding each hospital, with a nice engraving showing the type of building, etc. In addition to that several of the hospitals put out special Clinic Bulletins, a copy of which I shall also pass around.

The last two afternoons of the Conference were devoted to special demonstrations at the hospitals, showing the surgeries, organization, construction, etc. The management of an out-patient department and a metabolism clinic at the Montreal General hospital were two of the important demonstrations. At the Alexandra Hospital a demonstration of the cubicle system in the treatment of contagious diseases was most interesting. At the St. Justine Hospital a clinic by Dr. Bernard, demonstrating a modern children's hospital, brought out many points of interest, particularly the prevention of cross infection. At Notre Dame a model small ward unit and operating room department were demonstrated. At the Royal Victoria Hospital the new maternity hospital, a modern general operating room suite, the physiotherapy department and the oto-laryngological department were demonstrated. The Shriner's Hospital was open for visitors. As this hospital cost approximately $11,000 a bed, it excited considerable interest among the visitors. Other demonstrations were held at the other hospitals.

The real part of the Conference began on Monday afternoon. The entire afternoon was given over to the problem of nursing standards, education and service. This meeting was attended by many of the visiting surgeons, by practically all of the Sisters, who had charge of the various departments in the Montreal hospitals, and by visiting hospital superintendents, particularly from the East.

The nursing problem has become a surgical one and the American College of Surgeons has at last awakened to the fact that the surgeons must meet this problem face to face. Some rather startling statements were made and some suggestions which might become the basis for revolutionary handling of this problem. Practically everyone demanded nurses of a higher degree of intelligence than of former years, namely, graduates from high school and preferably university. The second point was that their training should be more practical and less didactic while in the hospital. In other words, a girl should give her first two years training to didactic work in the nurses' classes in the university and follow it with two years of intensive practical training in the hospital.

Many of the speakers seemed to express themselves as believing that under our present system nurses were graduated who did not have any "special duty" training before graduation and had to get it on their first few cases after graduation; that it would be better, indeed, to give the last six months to special duty rather than allow them to graduate with no such training. The subject of group nursing was discussed at great length. By that, of course, is meant one nurse having three or four cases and specialing for all at the same time.

A new idea to me was suggested in specialing by the hour. A catchy statement was made, that a poor man could not afford a special nurse by the day, but he could hire one by the hour and in an hour's time a nurse should be able to do a great deal for the comfort of the individual patient. The discussion brought out the fact that this would require a highly developed organization.

Many of the subjects did not seem new to Seattle doctors, as we have had our nurses in the university. Practically every hospital in Seattle demands a high school graduate; some of the hospitals already have the group nursing, and the hour nursing has already been considered. From the discussion, however, many of the Eastern cities are away behind in these particular subjects. The upshot of this afternoon's conference was the agreement of the College of Surgeons to a program of cooperation with the nursing associations in the higher development of nurses' training schools. Probably this will be added as one of the minimum requirements for standardization.

The thing that seemed to be of greatest interest was the Tuesday afternoon meeting of the Conference, at which time a symposium entitled "A Minimum Standard for Hospitals in the Care of the Industrially Injured or Ill Coming Under the Provisions of Workmen's Compensation Laws." This symposium was conducted by Frank D. Jennings of Brooklyn. Dr. Jennings is a good presiding officer and crowded a great deal into the afternoon's discussion. The symposium began with a talk by Charles Deckelman of Hartford, manager of the Claims Department of the Travelers Insurance Company. His paper was discussed by two industrial insurance commissioners, one from Ontario and the other from New York.

Mr. Deckelman gave the causes that lead up to and outlined, briefly, the various laws now on the statute books of the various states. He is a fluent orator. He read from manuscript and presented the entire subject in a quite unique manner. He began by showing how surgeons, hospitals and the employers of labor were harrassed on all sides prior to the enactment of workmen's compensation laws. He showed the relative proportion of decrease since the enactment of these laws. He discussed the subject from the standpoint of the injured workman; why the laws were brought about; what they hoped to accomplish and called attention to the fact that not only is the injured workman protected by the laws, but also the hospital and the doctor as well as the employer. He then called attention to the fact that you cannot enact a law which will prevent all accidents nor one which will give 100 per cent recovery following an injury. But what is intended by these laws is really a salvaging of a certain number of cases from the scrap heap of industry, just as you salvage old machinery or replace it by new. When the salvaging process cannot benefit the injured workman, then he shall be compensated by the industry to which he has given his services. His paper was well received and well discussed.

He was followed by Dr. Stanton of Schenectady, who read a paper on "Ambulance Service and First Aid." He made the startling statement that in his opinion the infections met with in injured workmen are brought about after the patient is placed in the ambulance. He backed up this statement. He had had cultures made from all types of machinery, from the grease about the machinery, from the clothes of workmen, from the floor and walls of the ambulance and from its very air, with the result that practically all pus-bearing infections could be directly traced to the ambulance or the physician in charge. He discussed at some length the question of antiseptics and stated in closing that the interne's conception of an ideal antiseptic was one that was gauged by the color, staining and burning powers rather than the bactericidal value. He closed by making a strong plea that a special ambulance be kept, wherever possible, by every hospital dealing with industrial cases for these cases alone; that it should always be accompanied by someone capable of giving the proper first aid treatment; that wounds should always be covered at once by a sterile gauze dressing, morphine be given and heat applied with no effort whatsoever being made to sterilize the wound. This should be left until the patient is in the operating room, where the proper equipment is at hand and clean hands are ready to toilet the wound.

The next paper, delivered by Dr. Munger of Grasslands Hospital, dealt with the reception of the patient in the hospital. This was one of the very strong and forcible papers of the symposium. He pictured the injured workman as he entered the hospital; he described the various types of people whose business it is to meet a patient; he called attention to the lack of courtesy on the part of many hospitals to an injured workman or the workman's friends; the antagonism that was at once brought about as the patient was allowed to remain in the corridor while the internes haggled over whose service the patient should go on, or perhaps the superintendent haggled over who was going to pay the bill; whether the patient needed a nurse; whether the nurse would be paid by the state; or prejudice against the doctor because he did not happen to be known at that hospital and many other incidental happenings, with which we are all familiar that occur between the time the patient leaves the ambulance and rests in the ward bed. He made a strong plea for more courtesy for the injured workman and that there should be in every hospital a definite routine established, so that the patient should not hear or see any of the necessary adjustments that must take place with members of the staff, with the administrative forces, the nurses and the internes.

One of the most brilliant speeches of the afternoon was by J. Frank Scannell of Boston, counsel for the Federal Mutual Liability Insurance Company. This discussion was general in character, touching on various phases of the previous papers. Mr. Scannell is a brilliant orator and, as his name would signify, is able to shower praise in a most acceptable manner. He drew a vivid picture of conditions before industrial surgery became a specialty in itself. He described the human scrap heap mentioned above and then praised the surgeons in general, hospitals, nurses and everyone connected with the handling of a case and closed his remarks by eulogizing in general the medical profession.

He was followed by John P. Frey of Cincinnati, President of the Ohio State Federation of Labor. He was introduced as foundryman, a man who had labored and who was now working diligently for labor. It was no easy task that confronted Mr. Frey, to follow the brilliant Scannell on a program such as this. However, after the usual amenities, expressed in the usual smiling manner, he stepped forward and became serious and before anyone knew what was going on he had pictured the fight of organized labor to reach the present standards, both as to laws and treatment. He took for organized labor the entire credit for establishing each and every one of the various compensation acts, both in Canada and the states.

He denied that anyone of the various parties involved was of more importance than the patient who was injured. In plain outspoken language he accused the representatives of the insurance companies, and there were many there, of being in the insurance business solely for profit, a commercial proposition pure and simple. He challenged them to show where they had ever advocated any one amendment to any law from a purely altruistic or humane impulse. He then turned to organized medicine and in unquestionable language, while thanking them in the interests of labor for their marvelous skill and their utmost desire as a profession to do the right thing, challenged the medical profession to deny that industrial surgery today is being done, not by the first-raters in the medical profession, but by nurses, internes and physicians working on a smaller salary under the direction of other men. He pointed his fingers at the hospitals and demanded that, inasmuch as they claimed certain privileges for their humanitarian work, they should in return guarantee to the injured workman their best facilities to prevent him from falling into the scrap heap so ably described by previous speakers. He defied those states that permit to appear on their statute books a law which states they will pay to haul the patient to the hospital and treat him for a week, but will treat him no further; in other words, the limited liability clause in various laws.

He closed by telling the story of the fruit growers and bankers of California, who decided it would be better not to go to the legislature for new laws, but to appoint a committee from each organization, which would sit around the table, each telling the other of their shortcomings. As you know, this was done in California with good results to both parties. He thanked the College for calling upon labor to be represented at this Conference.

Dr. Albee of New York followed with a long paper, entitled "General and Special Features in Hospitals for Adequate Treatment of Industrial Patients." It would take too long to relate the many important points in his paper, but a few of the outstanding points were his decree in favor of Carrel-Dakin's solution in the treatment of infected wounds; his questioning the value of physiotherapy as it is practiced today to the exclusion of more careful handling of the patient while under the care of the surgeon. He seemed to feel that very few hospitals, to which he was called for purposes of clinics, had the equipment that was essential in every hospital doing any type of fracture work. He seemed to lay great emphasis on having proper tables in the operating room, proper bandages made at the hospital. He stated that there was no plaster bandage on the market that could compare with the properly made hospital plaster bandage. He believes the workshop is an important adjunct to any large hospital having industrial cases. Getting men into the frame of mind for work as soon as possible after injury is his motto. He described his workshop in New York, where men injured in industry can return to the atmosphere of the shop just as soon as it is possible for them to get about. He showed a few lantern slides to close his talk, one in particular displaying the type of fracture tables that every hospital should have.

The discussion of his paper was opened by E. A. Sommer of Portland, Oregon, who called particular attention to the amount of physiotherapy being demanded by the profession at this time. He took down the house with his statement that most of the limps that one sees come out of a hospital are not the result of the fracture, but of the lack of intelligence on the part of the surgeon because he does not understand the psychology of the fracture. The limp is the result of incomplete mental surgery, not incomplete union.

Dr. George Davis presented the next paper and one could easily understand why the United States Steel Company is a business success. After telling the number of different companies in which he is Surgeon-in-Chief, he outlined with lantern slides the progress of a patient from the time of injury until he was either compensated for loss or back at work. One could readily see from the records kept that the doctors who are working for the United States Steel Company are not only physicians and surgeons, but experts in paper work. Surgery is merely a cog in the industrial machinery, necessary, expensive, but not to be trifled with on the part of the surgeons or of the clerical force. Not the least of the points brought out was one which showed how the Illinois Department of Labor and Industries gets a blank from the United States Steel Company's cases much more comprehensive, indeed, than the one that they demand.

The discussion of his paper was by William Foster of Syracuse, General Attorney for the Aetna Insurance Company. He called attention to the fact that it is sometimes impossible to get from physicians a statement of what they themselves have found. He gave a very good discussion of the paper from the insurance standpoint.

The addresses dealing with cooperation between hospitals and those administering workmen's compensation laws, by W. G. Phillips of Baltimore, Vice-President of the United States Fidelity and Guaranty Company, and one on the care of the ambulatory patient and follow-up of discharged patients by Dr. S. Potter Bartley of Brooklyn, were both well received, but the program was entirely too long and unfortunately most of the surgeons had left by this time to make application for their clinics the following morning.

While this was going on a very important matter was being discussed by the Board of Regents. I shall pass around a copy of the article appearing the next day in the public press. The Board of Regents adopted the following minimum requirements pertaining to the treatment of traumatic surgery.

1. "All hospitals receiving traumatic cases for treatment be required to meet the minimum standard requirements of the American College of Surgeons.

2. "Each of these hospitals shall have a committee responsible for the supervision of traumatic surgery.

3. "A surgeon approved to treat traumatic cases shall be:

(a) "A graduate of scientific medicine in good standing and licensed to practice in his respective State or Province.

(b) "Competent in the field of traumatic surgery.

(c) "Worthy in character and in matters of professional ethics; that in the latter connection the practice of division of fees under any guise whatever be prohibited.

4. "Surgeons dealing with traumatic cases shall keep accurate and complete records of all patients, a complete record being one which includes:

"Immediate record of injury; detailed description of physical findings; adequate record of treatment; a record of estimated period of disability; and the end-results, where possible. These records shall be filed so that they are available at all times for submission as shall be required.

5. "Surgeons and hospitals dealing with traumatic cases shall have available adequate diagnostic and therapeutic facilities.

"A committee was appointed for the purpose of carrying on these studies and the making of recommendations to the Board with a view to improving the service in this field, which is of such great economic importance."

When one stops to consider the thousands of cases under some form of social medicine, either under the state compensation boards, under a contract system or under the direction of insurance companies, at any rate outside of the private practice of surgery, and when you further consider the fact that the leaders in the industries involved are not at all satisfied with the end-results being obtained by the present methods and may at any time demand a more extensive subjugation of the independence of the surgeon, it well behooves the American College of Surgeons to get busy on this subject. One of the first steps was the adoption of the minimum standard in fracture cases.

I do not believe the surgeons of this society realize just what that is going to mean. It was predicted that it is but the beginning of more careful scrutiny of all operative work. That this scrutiny has begun with fractures rather than some other phase of surgery is due to the fact that industry cannot afford to carry the burden of the high taxation resulting from injuries. As a result of labor saving and labor protection devices, accidents have been reduced to a considerable degree, while, on the other hand, with the advent of open treatment of fractures, with the demand that the physiotherapist complete the work of the surgeon, with all the expensive treatments and equipment entailed, with the startling illumination that is brought about by means of the x-ray, industry, which has always been on the alert to correct monetary losses, is now turning toward the greatest leak that industry has known for many years, namely, the high cost of the industrial accidents.

This is the first time in the history of modern surgery that surgeons, hospitals, insurance companies, industrial labor boards and labor itself, all presented their side of this problem and the picture exhibited to the surgeons was not a pleasing one. When laymen will stand before a group of noted surgeons and explain in careful and technical terms present conditions; when lawyers, while flattering the profession, point out in a subtle manner the gross defects of our present system, no right thinking surgeon can fail to recognize the signs of future turmoil.

Dr. McEachern, the following morning, showed his slides of the Australian hospitals.

This gives a brief summary of the meeting of the College. I would say that the things that stood out at this session were: First, the investigation and discussion of industrial surgery and fractures in standardized hospitals; second, the beginning of a study of the nurses' problem in the modern hospital; third, the beginning of the development of coordinating departments in general hospitals, looking toward the ultimate ideal wherein all branches of medicine are found in a general hospital rather than the several specialties being separated and doing their work in smaller hospitals.

OREGON

PORTLAND CITY AND COUNTY MEDICAL SOCIETY

Pres., S. M. Strohecker; Secty., R. H. Wellington

The first regular bimonthly meeting of Portland City and County Medical Society was held January 5, Dr. S. M. Strohecker, president, in the chair.

Dr. A. G. Bettman made a report on the progress of the Medical Society Telephone Service.

The following physicians were elected by ballot: Drs. C. W. Brunkow, C. C. Newcastle, and Merle W. Moore.

The following applications for membership were read: Drs. W. P. Scroggs, D. R. Knapp and Paul A. Blair.

Mr. Clyde C. Foley, executive secretary of Oregon State Medical Society, presented the proposed amendments to the Oregon Practice Act, which are to be brought before the state legislature at the coming session. The New Act proposes the annual registration of every practitioner of medicine and surgery duly licensed within this state and exempts from registration those who practice in accordance with the requirements of the laws of the United States, serving the United States Army, Navy, Public Health Service or Veterans' Hospitals. Discussion of proposed change to this act were made by Drs. A. W. Chance, Ettleson, Shea, Dillehunt and Wilson Johnston.

It was suggested by Dr. Dillehunt that the State Board of Examiners make provision for reciprocity for all applicants to practice in this state who have passed the National Board of Examiners.

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., W. C. Woodward; Secty., O. H. Christoffersen

A general meeting of the King County Medical Society was held at Seattle, January 3, with President Woodward in the chair. Minutes of the meeting of December 6 were read and approved. There were 97 members present.

The following were elected to membership: Drs. Hannah Johnson, J. N. Sowers, J. Suzuki and J. A. Weber. Applications for membership were read from the following: Drs. R. E. Benveniste, G. N. Rotton, Saul Rubin.

Dr. C. E. Watts reported a case of coroneal thrombosis, the patient living five and a half years after its occurrence. The exhibited specimen showed the scar of the old thrombosis.

A letter from the Pacific Telephone and Telegraph Company stated that members who had signed for the classified section of the new directory and wished to cancel the same must do so by January 8.

The Location and Advisory Committee reported they had assisted fifteen physicians in obtaining locations since its appointment last June.

The Entertainment Committee reported it had sponsored two social affairs, a dinner at the Olympic and a dinner dance at the Inglewood Golf Club. It turned to the society a balance of $25.00.

The Membership Committee reported forty-nine new members received during the year, with two resignations, one expelled, five transferred and six deceased.

The Program Committee reported seventy-two speakers for meetings of the year, of whom eighteen came from cities other than Seattle.

The committee on University Extension gave a resume of the activities of the year, with the names of instructors for the 1927 course of lectures.

The Goiter Prevention Committee reported that thirty-one schools had been investigated, with fifteen others requesting surveys. During the year 2475 pupils were examined.

The Legislative Committee presented its report with a list of those who had contributed to its fund. A balance of $19.00 was turned over to the society.

The Credit Bureau reported $47,450.70 collected through its efforts during the year.

The Welfare Committee reported calls made on sick members during the year and drew attention to the decrease of disease among members of the society.

The Committee on Visiting Physicians outlined its purposes and gave a summary of the proposed attentions to visiting physicians.

The Secretary-Treasurer's report covered receipts and disbursements of the society, with details of other funds and financial interests.

The following officers were elected for the ensuing year: President, A. T. Wanamaker; vice-president, A. O. Nelson; secretary-treasurer, W. W. Bell; trustees, S. F. Wiltsie and W. C. Speidel; delegates to state medical association meeting, Roger Anderson, W. C. Woodward, B. T. King, C. E. Hagyard, L. J. Palmer, C. W. Knudson, A. C. Crookall, J. T. Dawson, O. H. Christoffersen and J. R. McCurdy.

The newly elected president was escorted to the chair and delivered a short address.

LEWIS COUNTY MEDICAL SOCIETY

Pres., Frank Leslie; Secty., Rush Banks

A meeting of Lewis County Medical County was held at Centralia, Jan. 10.

Dr. G. W. Overmeyer, of Chehalis, presented a paper, "A Brief Synopsis of Experiences in a Scarlet Fever Epidemic at the State Training School."

The following officers were elected for the ensuing year: President, Dr. G. W. Kennicott, Chehalis; vice-president, Dr. W. R. Scott, Centralia; secretary-treasurer, Dr. Rush Banks, Centralia.

PIERCE COUNTY MEDICAL SOCIETY

Pres., E. F. Dodds; Secty., W. B. Penney

The annual business meeting of Pierce County Medical Society was held at Tacoma, December 28, 1926, Dr. E. F. Dodds in the chair. Minutes of the last two meetings read and approved.

It was moved and seconded that the following amendments to the Constitution and By-Laws be adopted:

That Article III, Section 1, be amended to read as follows—

The officers of the society shall be elected at the last regular meeting in April, to take office the last regular meeting in May which is the annual meeting. Nominations shall be made from the floor, and there shall be at least two candidates nominated for each office. All elections shall be by ballot. The vote of a majority of all the members present shall be necessary for an election. All officers shall hold office until their successors are elected and qualified.

That Article V, Section 1, of the Constitution be amended by striking out the word "December" and inserting the word "May" in its place.

This was unanimously carried.

Dr. C. C. Leaverton gave a report of the Advertising Committee. There was a good deal of discussion in regard to this, and Dr. Leaverton was authorized to present definite plans to the society.

Dr. Steagall spoke of the necessity of getting a larger attendance at the meetings.

Dr. Dodds gave a report of the suggested change of location of the library. After some discussion Dr. Charles McCreery moved that we stay where we are during the next year. The motion was seconded and carried.

PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

Pres., E. F. Chase; Secty., M. J. Morris

Dr. E. Frank Chase, the retiring president, entertained the members of Puget Sound Academy of Ophthalmology and Oto-Laryngology with dinner at the Rainier Club, January 18, for their annual banquet.

Dr. Chase reviewed the work of the Academy for the past year, then introduced Drs. Arthur Burns and N. D. Pontius who have recently returned from extensive travel and studies in Europe. They both gave very interesting reports of their experiences and the conditions of affairs in Europe. Dr. A. O. Loe, president of the Public Health League, who was present as a guest, gave a short talk as did Dr. E. C. Wheeler of Tacoma.

The Secretary-Treasurer read his report for the past year.

Five men were elected to membership in the Academy; Drs. K. W. Amano and H. L. Goss, Seattle; H. T. Rhoads and A. B. Murphy, Everett, and F. W. Jones, Bremerton.

Dr. George Swift was unanimously elected an honorary member of the Academy in appreciation of the admirable work he did while an active member.

Officers for the ensuing year were elected as follows: President, Dr. H. V. Wurdemann, Seattle; vice-presidents, Drs. E. E. Maxey, Aberdeen, and C. W. Shannon, Seattle; secretary-treasurer, Dr. M. J. Morris, Seattle.

Dr. Wurdemann upon taking the President's chair brought forth the influence the Academy has for the good of its members, both scientifically and for fellowship. It is his desire to have more clinical cases presented during the present year, feeling that more can be learned from these than from scientific papers.

A unanimous vote of thanks was accorded Dr. Chase for the service he has rendered in making the Academy a success during his presidency and for the excellent dinner which was his last offering to the members as their president.

LATERAL VIEWS OF HEART AND AORTA. Samuel Brown and H. B. Weiss, Cincinnati (Journal A. M. A., Jan. 22, 1927), have made a study of the heart and aorta and their relationship to the thorax in the lateral view. It appears that the position of the heart in the lateral view of the thorax is oblique. The configuration of the heart shadow is oval. Changes in the volume of the heart and of the individual chambers can be recognized. The heart is located in the anterior half of the thorax. There are two transparent triangles due to lung tissue, one situated in front and one in the back of the heart. There is definite relationship of the heart to the aorta, and of the heart and aorta to the thorax. Under normal conditions, the posterior border of the heart does not touch the descending portion of the aorta unless the heart is markedly enlarged. There is a definite relationship between the descending portion of the aorta and spine. Under normal conditions the descending portion is usually found in front of the anterior surface of the dorsal spine.

PUBLIC HEALTH LEAGUES

WASHINGTON

(Olympia, Wash., Special to Northwest Medicine)

BASIC SCIENCE BILL

Indications point to favorable health legislation at Olympia for this session. The Basic Science Bill was introduced in the Senate by the committee on medicine, dentistry and pure drugs and has made substantial progress. Having the endorsement of the entire committee, representing on its personnel members from all factions in the legislature, it is apparent that this measure will be moved forward rapidly.

Giving recognition to the objection of the Governor in his veto of this bill last session, the new measure makes possible the selection of the board of basic sciences from the faculty of Washington State College, as well as the University of Washington. The Governor will have the authority under the present terms of the bill to select his board from the faculties of these two state institutions. A closer working arrangement with the department of licenses is also provided for.

The chief drive against the measure at this session appears to be coming from the chiropractors who are offering strenuous objection to taking an examination in chemistry. This group holds that their manipulative science does not involve chemistry. However, some 20 out of 24 chiropractic catalogues give chemistry as one of the subjects in the curriculum.

"DIPLOMA MILL" KING ON DECK

John E. Lydon, he of the late American "University" of Sanipractic, closed down by court action as the result of diploma mill activities, is handshaking various members of the legislature and endeavoring to get a friendly audience for another bill of sanipractic, whereby this cult may take over general medical practice. "Dr." Lydon is a glutton for punishment. The 1923 session provided machinery for the revocation of the licenses of some 100 of his "graduates." The next legislature amused itself with his measure to give enlarged healing powers to his cult. Then the good people of Washington refused to sign his sanipractic referendum petition. Now he appears at the state capital with other proposals. Verily these are hard and lean days for this inventor of sanipractic and "university" president.

WILSHIRE'S STYLE IS CRAMPED

Dr. Arthur J. Cramp, head of the bureau of investigation of the American Medical Association, has written a very interesting and effective article dealing with the recent styles in horse collars, a la Wilshire, he of the fancy beard and magical powers. The current issue of Hygeia gives some four pages to this colossal quackery. Mention is made by the writer of the efforts of the Public Health League of Washington in conducting an investigation in Seattle and of the results obtained.

The Wilshire organization has extended its operations in the state by providing offices in some of the smaller cities. It is reported that business in Seattle, Tacoma and Spokane has shown a very decided slump and it is now necessary to reach new territory.

One of the outstanding features of the drive against this wire healer and his gang of cappers, snoopers and decoys has been the work of the Spokane Medical Society, working through the Better Business Bureau of that city, in getting the Spokane Spokesman-Review and the Spokane Chronicle to refuse to accept advertising from the Iona company. In Seattle, the Seattle Record in a series of ten articles exposed the fallacy of the magic horse collar, and advised of the danger of accepting or using the treatment. In Tacoma there has been considerable activity against the device by officers of the League and from better business bureau officials. Altogether it looks like a bad season for California wire pulling.

BOOK REVIEWS

Edited by **KENELM WINSLOW, M.D.**

SKETCH OF THE HISTORY OF THE MAYO CLINIC AND MAYO FOUNDATION. Cloth, 185 pp. $3.50. W. B. Saunders Co., Philadelphia and London, 1926.

The Mayo Clinic is the most marvelous example of privately organized medicine that the world has ever known. Its origin, growth and future must be of interest to every medical man. To whom and to what is the Clinic due? The answer is, to the men, the time and the place. The men are the Mayos, father and sons. The father, Dr. W. W. Mayo, was a strong man in body and mind. He lived to be nearly a century old and then died from the result of an accident. One can well remember him at 87 in Seattle during 1907, when he was making a tour of the world. He was a leader in medicine, a pioneer in abdominal surgery, and one of the founders and some time president of the Minnesota State Medical Society.

The father retired about the time the sons began work in St. Mary's Hospital at Rochester thirty-seven years ago with thirteen patients. Now some fifty to sixty thousand patients visit the Clinic annually. The strong brotherly unity that has always existed between the doctors, William J. and Charles H. Mayo, is as rare as it has been essential in the growth of the Clinic. No matter how important a personage the patient, any preference shown for one doctor or the other has always been absolutely ignored by the Mayos. The patient operated upon by William Mayo one morning found he was under the care of Charles the next, and vice versa. Considering the oneness of the doctors Mayo, it may seem invidious for an outsider to discriminate between their personalities, but this is essential to an understanding of the growth of the Clinic.

William Mayo is known unofficially at the Clinic as "the chief." Both brothers are great artists and masters in surgery. Charles Mayo is more original and versatile than his brother, and no operation in the body is beyond his skill, from B to C, or from bunion to cataract. His natural kindliness and social proclivities make him beloved by all. William Mayo is a born executive, leader of men and business genius, besides being the greatest abdominal surgeon of his time. He inspires respect and admiration, tinged with a certain degree of awe in his coworkers and subordinates.

It is the fashion of today to compare Washington with our captains of industry (Woodward and Professor Hart). So William Mayo may not ineptly be compared with Washington in this and other respects, although possessing a far keener intellect than the father of his country. It has often been remarked by observers that he would be at the head of one of our great industrial corporations, if he were not the head of the Mayo Clinic today. His unconquerable ambition, strong will and force of character, decisive clear mind, constructive and executive ability, with the surgical genius possessed by both brothers, have built up the greatest medical center of the world today. But not content with their incomparable achievement, the Mayos develop still farther and become great scientists, writers, educators and philanthropists.

The gift by them of two million dollars to the University of Minnesota for the purposes of medical education and research is well known. Not so generally appreciated is the existence of the Mayo Property Association, with its five million dollars in plant and equipment at Rochester, and five and a half millions besides in securities in safe deposit for endowments. The ultimate object of this association is at some time to turn over all of its property to a class A medical school in the United States. Moreover, although the Clinic has had immense financial success, it has at all times been conducted in the most liberal and charitable manner, turning down none for lack of money, and getting no financial returns from 55 per cent of the patients. Many are the tales told the writer by patients of cheques returned and presents of money as gifts, especially at Christmas.

Professional ability alone could never have erected such an edifice as the Mayo Clinic. For its upbuilding was required a captain of industry and big business executive, wise in the selection of colleagues to complete the task. The Clinic has indeed developed men that rival their teachers, as Judd, who is without a peer in surgical technic. Scientific research has not made the Clinic, for there was none in the early days. But now it is becoming one of the great centers of research, as the discovery of thyroxin by Kendall attests. Another leader of medical research at Rochester has probably changed the whole medical practice of the world more than any other living man—Rosenow. Time and place were noted as factors in the success of the Clinic. The time of the beginning of the Clinic coincided with that of the antiseptic era and renaissance in surgery. Without antisepsis and asepsis such growth would have been impossible.

The place, Rochester, was remote and small but so was Bethlehem. Removed from the rivalries and distractions of city life, the Mayos became surgical devotees, consecrating their whole lives to their work as fully as if in a religious retreat. Few among the leaders in medicine would willingly be sentenced to Rochester for life. This has been one of the penalties of fame and success. The future of Rochester is assured. For years it was the talk of the profession that the passing of the Mayos would be followed by the passing of the Clinic. This sentiment was even reflected by bankers in their evaluation of the bond issues of the city of Rochester. But the business genius that has built up the Clinic has taken equal care that the institution should be perpetuated by university affiliations, endowments, and by the fame, magnitude and efficiency of the organization. Rochester is now the medical mecca of the world.

This anonymous book describes in detail the origin and development of the Clinic, as suggested above, down to the present day with its staff of 118 members. It describes every aspect of the Clinic and its personnel from the beginning. Thus, in the index of this Who's Who at Rochester one may find that our esteemed Dr. John M. Blackford served five and a quarter years in diagnosis under Dr. Plummer. This is one of the most interesting books today for the whole medical profession. It ought to be a "best seller."

WINSLOW.

PRACTICAL SURGERY OF THE JOSEPH PRICE HOSPITAL. By James William Kennedy, M. D., F. A. C. S. Surgeon to the Joseph Price Hospital, Philadelphia, etc. Illustrated with 129 Original Half-Tone Plates, Some in Colors. 861 pp. $10. F. A. Davis Co., Philadelphia, 1926.

There is room in every surgeon's library for the class of book which departs from the well beaten paths of surgical teaching. If they are dogmatic in tone or speculative in trend they are none the less stimulating, when based on sound fundamentals. Such a work is this by Dr. Kennedy, who was for several years an assistant of Dr. Price and perfected his technic under the eye of the master.

The large volume of surgery done at the Joseph Price Hospital since the death of its founder has firmly established the principles which he taught so forcefully. The chapters dealing with vaginal hysterectomy, appendicitis, ectopic gestation, repair of the birth canal and pelvic infections are sound and illuminating. They are the expression of views formulated upon an experience of many thousands of cases, and although in some ways they depart from current practice, they are always rational. The student's love for the master is apparent throughout the book.

FORBES.

DR. ROBERT C. COFFEY CLINIC AND HOSPITAL

New brick and tile buildings have recently been constructed and equipped for the joint occupancy of the DR. ROBERT C. COFFEY CLINIC and the PORTLAND SURGICAL HOSPITAL. The facilities and privileges of the Hospital are limited to the practice of the Clinic and recognized specialists in Urology, Neurology, Cardiology and Internal Medicine who are acting as independent consultants to the Clinic.

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How I Came to be Born. The Autobiography of an Unborn Infant. By Armenouhie T. Lamson. 179 pp. The Macmillan Company, New York, 1926.

A great majority of pregnant women pass through the period of gestation and parturition with no knowledge whatever of the physiologic developments accompanying this procedure. The author of this little volume, a prominent Seattle resident, has compiled the essential facts, beginning with conception and progressing through the embryologic stages and the development of the fetus to full time. She states, "It is the sincere wish of the author to make this modest book a worthy handbook to mothers and teachers of young boys and girls, who prompted by newly awakened sex consciousness ask 'How did I come to be'?" While devoid of many technical details, the essential facts are presented in simple language so couched that any reader can comprehend the subject presented. Chapters deal with framework of the body, internal organs, the brain and other essential features in the process of development. The book is intended for the lay reader and is worthy of commendation to all seekers of information on this subject which should receive more judicious publicity.

Principles and Practice of Chemotherapy. With Special Reference to the Specific and General Treatment of Syphilis. By John A. Kolmer, M. D., Dr. P. H., Professor of Pathology and Bacteriology in the Graduate School of Medicine, University of Pennsylvania. 1106 pages with 82 Illustrations. Cloth $12.00 net. Philadelphia and London: W. B. Saunders Company, 1926.

Almost the first half of this book is taken up with the chemotherapy of various diseases other than syphilis and the remainder is devoted to this disease. The book gives evidence of an immense amount of experimental work (mostly on rabbits) and the extensive bibliography shows the vast amount of work and study given to its preparation. While at first glance it might seem that too much of the book was devoted to experimental and theoretical considerations, a moment's reflection will readily convince the thoughtful physician that, in using new compounds, a knowledge of their toxicity for healthy animals, their curative properties for an experimentally produced infection, their rate of absorption and elimination, their toxic effects in the diseased human subject, and their curative activity as modified by the pathologic and immunologic changes of disease are a necessity to the intelligent use.

In treating syphilis there is too great a tendency to follow certain set rules, without a sound working knowledge of the underlying principles of the mechanism of infection and pathology of the disease, as well as knowledge of the comparative curative properties of the various antiluetic remedies, including their pharmacology, toxicology, therapeutic applications and limitations. To overcome this tendency, a study of this book will be of the greatest aid, especially since so little has heretofore been published along this line.

Jacobsen.

The Normal Child and How to Keep It Normal in Mind and Morals. By B. Sachs, New York City. 105 pp. $1.50. Paul B. Hoeber, Inc., New York, 1926.

This is a concise treatise for parents, teachers and physicians on the subject of mental and moral hygiene in infancy and childhood. In the individual chapters are discussed the problems incident to the various ages. The author, unlike some of his contemporaries, makes a plea for the exercise of common sense in dealing with childhood problems. The concluding chapter is entitled, "The Evils of Psychoanalysis." In it the author attacks the school of Freud which he claims has greatly overrated the sex factor in the life of the child and has misled both physicians and parents. As the result, many children have received sex instruction of a sort which is worse than none at all.

Olmsted.

History Taking and Recording. By James A. Corscaden, M. D., Associate in Obstetrics and Gynecology, Columbia University, New York, 78 pp., $1.50, Paul B. Hoeber, Inc., New York, 1926.

In part I of this monograph the author explains the general principles of taking and recording histories. Its accuracy depends on the power of the patient to observe himself, to remember what is observed, to express himself so as to be understood, and his willingness to reveal what he knows. If the patient has a distinct complaint on his mind, with powers of observation, memory and narration, he should be allowed to tell his story. One encounters difficult problems in patients of low mentality and antagonistic attitude, fear, falsehood, ignorance of illness and medical matters. The author explains how to overcome these difficulties. The form of the history is of prime importance, this subject being thoroughly discussed. Part II gives terms employed in history taking. These are listed under the different headings of the history with explanations as to the meaning and subdivisions of each. This little volume suggests a commendable course of study for the important matter of taking histories.

A Statistical Survey of Three Thousand Autopsies from the Department of Pathology of the Stanford University Medical School. By William Ophüls, M. D., Stanford University Press, Stanford University, California, 1926.

The pathologist will find much of interest in this volume, in which a great variety of autopsy material is considered in more or less detail. The wealth of material is indicated by the citations under different headings. Thus, of active tuberculosis there were 632 cases. These are discussed under the different organs affected. There were 1,288 cases of septic infections, beside 230 cases resulting from infectious diseases. There are interesting summaries under many headings in these groups. Under general arteriosclerosis there were 917 cases without serious renal involvement, in addition to 212 grouped under the heading of nephritis. It is to be noted that there were 285 cases resulting from alcoholism and drug addiction. This volume presents the results of much labor and detailed observations.

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ORIGINAL CONTRIBUTIONS

TREATMENT OF CANCER*

THE RELATIVE IMPORTANCE OF THE VARIOUS AGENCIES NOW IN USE

Robert C. Coffey, M.D.
PORTLAND, ORE.

To comprehensively study cancer in a particular location one must have an understanding of the general principles of treatment and behavior of cancer wherever found. The subject of cancer is important because so many of us are going to die of it. I believe it is said that one out of every thirteen men and one out of every nine women, reaching forty years of age, will die of cancer. Fifty per cent of all cancers are of the gastrointestinal tract; twelve per cent of the rectum; thirty per cent involve the stomach. The question of cancer is being much discussed now and the treatment of it varies a great deal.

I know of nothing particularly new on the subject, although there are those who would have us believe there are new and startling things. There is a wave now, as there has been at many times in the past, in the belief that cancer is a germ disease. Yet there is now no more scientific evidence nor more enthusiasm, so far as I know, than there was thirty-five or forty years ago. My own opinion is that it would not make any great difference so far as the treatment is concerned. Such a discovery might lead to a diagnostic test analogous to the Wassermann test for syphilis or, knowing the source, we might learn to avoid it to an extent. Certain individuals, who are forward-looking and seek to protect their pocket books in old age, are bringing forth various serums for the treatment and prevention of cancer. We are liable to be deceived on that point, if we fail to study some of the underlying principles.

There has been no disease in which an efficient serum, either as a preventive or curative agent, has been developed except in such diseases as produce immunity by an attack of the disease in question, as far as I have been able to learn. The germ of tuberculosis was discovered about 1882. Tuberculin was developed and was hailed as a great cure and yet tuberculosis has not been cured, nor will tuberculin prevent tuberculosis. We have known the spirochete of syphilis for twenty-five years or more. We have remedies for the disease but nothing to prevent it. Although tuberculosis and syphilis tend slightly to produce immunity, cancer has very little tendency to do so. I have seen ony one case in all I have observed that showed any tendency to produce immunity or cure itself after an operation and after recurrence, and even in this case the patient died of cancer in the end. The discussion of a curative or preventive serum, and more particularly the use of these various serums, is doing great harm to the cancer patient. There are thousands of people who are dying annually of cancer as a result of misinformation.

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* Read before the North Pacific Surgical Association, Vancouver, B. C., December 10, 1926.

The first and most important thing in connection with the treatment of cancer is to see it when it is curable. This is the only chance we have to do much for the cancer patient. To do this, we as surgeons through the family doctor must educate the laymen. I think cancer is more or less a muddle in the minds of the people. You can talk to people about it and they don't really know what you mean. It is up to us to get some kind of a clear terminology to the people so that they can understand it, and then they will know that these various irregular agencies are not going to cure them.

One of the illustrations that I very often use in talking to patients is that of an unusual plant which may come up in a farmer's field. The farmer is not sure just what the plant is, is undecided as to whether he shall destroy it or wait and see what it is. Finally he destroys the plant and with it all its potentialities as a future pest in that community. But suppose, on the other hand, he neglects to destroy it. The plant blossoms, its seeds ripen and scatter in the immediate vicinity and next year there may be a thousand or more plants. He looks them over and sees them multiplying. He becomes suspicious and decides to take them all up and destroy them. His potential pest is thereby obliterated. But suppose he ignores the weeds instead and harvests them with his hay. Some of the seeds fall in the field, others by the roadside, others are carried away into remote places by birds and mice. It becomes a pest and a menace to the community, for he now will certainly not take time to seek out all these weeds and destroy them and after another year the pest is firmly established and the case is hopeless.

A patient asks: "What is cancer? What is the difference between cancer and a tumor?" A simple answer is: "A cancer is a lump or mass of nonfunctioning cells which have the power of growing and reproducing themselves after being transplanted to another part of the body. A tumor has not the power to grow and reproduce itself in a distant part of the body after being transplanted." A patient comes with cancer of the breast and you advise immediate operation. She counters with some such argument as that her sister is coming up in two or three months and she would like to wait until she gets here before being operated upon.

What kind of an argument are you going to make in this case? You may use the following homely illustrations: In the body there are certain vessels carrying blood to every part of it for nutrition. Coming away from every part of the body are lymph vessels which pick up and carry away unused and superfluous materials and empty them into the blood stream which circulates throughout the body and carries them to the eliminative organs, such as kidney, liver, etc. In the course of these lymph vessels there are certain filters, such as you might put in the waste pipe of a kitchen sink to catch any coarse substance that might block the sewer pipee or otherwise do harm. These filters are known as lymphatic glands. In the growth of cancer, some cells are detached and are carried along the lymphatic vessels to the filters. These effectively detain detached cancer cells in the course of their journey toward the blood stream. Here in this gland or filter the cancer cell multiplies and forms another cancer. From this new point or cancer another cell may become detached and float on down to another filter or gland, where it may be caught and multiply, forming a third cancer from which still another cell may be detached and float directly into the blood stream. The case is then hopeless, for the cell will now lodge at some internal point where the blood vessels are too small to allow the passage of the cancer cell which in its new location starts a new growth out of reach of any form of treatment, such as in the bones, the lungs, the liver, the kidneys, the brain, etc.

It must at once be apparent that I am not speaking for the instruction of doctors on the cancer question. I am simply bringing forward an illustrative method of reaching the public and I am sure that, if they knew these simple facts, the mortality of cancer would be brought much lower than it is at the present time, for a patient who has this meagre amount of knowledge clearly inculcated may at once be made to realize the following points:

1. Cancer, if it is discovered before a single cell has been detached from the original growth, is curable by any destructive agencies whatsoever, whether it be the knife, the electric cautery, a simple hot iron, a caustic paste or what not.

2. If a single cell has been detached from the original growth and has traversed the lymphatic vessels to a lymphatic gland or filter located at a distance, the simple destruction of the original growth by any agency whatsoever, be that agency the knife, electric cautery, the cautery iron or caustic paste, accomplishes nothing, for the cell which has lodged in the remote gland or filter is now engaged in the formation of a new cancer made up of exactly the same kind of cells as the original cancer and it

will destroy the patient's life just as soon as if the original cancer had not been destroyed.

3. If the original cancer and the lymphatic gland, including the one and only cell which has escaped, be removed by surgical measures, the patient will still be cured, even though the operation may not be thorough.

4. But, if the surgeon lacks boldness or knowledge of the glands through which the cancer cells must travel to reach the blood stream, he may miss the one gland or filter which contains the one detached cancer cell. Thereby the patient's life is lost. The operation is a failure because it was poorly performed.

5. It is, therefore, apparent that it is very important for a patient who has cancer to seek a thorough surgeon who is bold and well informed as to the method of spread of cancer.

6. If a single cell has escaped through the last intervening filter or lymphatic gland into the blood stream, the case is hopeless and no treatment whatsoever will greatly retard the fatal termination.

7. Inasmuch as there is no known method of determining whether a detached cancer cell has been lodged in the lymphatic glands or filters, or when a cancer cell has escaped through these filters and into the blood stream, it is apparent that cancer must at once be classified as an emergency, for the time required for the passage of a cancer cell from the removable part of the lymphatic system into the blood stream may be very short. Indeed, it is possible the time intervening between curability and incurability may be measured in hours or even minutes.

8. Cancer is essentially a surgical disease and all agencies for its treatment should be in the hands or under the direction of the surgeon. For, while the surgeon may not be technically skilled personally in such agencies as radiotherapy, he knows the mode of extension and the probabilities of cancer as well as possessing a thorough knowledge of the anatomy bordering on the areas to be treated.

I think it is always well for the laity to know that the cancer cell is not a foreign body but that it is an embryonic or immature cell which has not yet developed to the stage where it can be used in the definite construction of the organs or the tissues of the body and is, therefore, not yet subject to the laws governing the coordination of its cells. It may, therefore, be classed as a lawless cell, although it so resembles the normal cells or tissues in which the growth has developed that only a very expert pathologist can tell the mature from the immature cell.

McCarthy's study in the differentiation of cancer cells, followed by the classification of cancer into types by Broders, constitutes the most important contribution which has been made on the cancer question in recent years. Broders found that in Class I, in which 25 per cent of the cells were embryonic and undifferentiated, 92 per cent of good results were obtained; in Class II, with 50 per cent of embryonic cells, 62 per cent of good results; in Class III, with 75 per cent of embryonic cells, 25 per cent of good results; in Class IV, with 100 per cent of embryonic cells, 10 per cent of good results were obtained. The Mayo Clinic, working on this basis, has shown why certain cancers should be treated with radiotherapy, while others do best with surgery.

While this typing of cancer is most important in arriving at a correct relative prognosis at a given location, another and possibly more important consideration, taken from the purely surgical standpoint, is the question of the location of the cancer regardless of the type. From this latter standpoint the most important question is whether or not the obstructing lymphatics or filters in the course of lymphatic vessels, draining a given cancer area, are so located that they can be removed by radical operation.

For instance, we know what a forlorn hope is removal of cancer of the stomach as compared with that located at certain other points. In cancer of the tongue, the lymphatic filters are deep and inaccessible, while in cancer of the lip the lymphatics are easily accessible and may be removed early. In lip cancer approximately 80 per cent of the cases are curable, if operated upon early, while in cancer of the tongue a cure is rare. Cancer of the breast furnishes possibly the most interesting field for study of the possibilities of cure. More than thirty years ago Halstead, Willy Meyer and others recommended the radical removal not only of the breast, but the overlying skin, the pectoral muscles, fascia and all the lymphatics up to the clavicle and around the axillary vessels, thus marking an epoch in cancer surgery in establishing the principle previously referred to in this paper, viz: the one essential in the surgical cure of cancer is the radical removal not only of the primary growth, but likewise the lymphatic glands and vessels intervening between the growth and their entrance into the blood stream. Surgical curability of cancer depends chiefly upon this one point.

Until recent years cancer of the rectum was considered by many as not a hopeful field for surgery, first, because of its almost prohibitive mortality and, second, because it almost always returned in contrast to cancer of the sigmoid, which offered one of the most hopeful fields for cancer surgery. As a matter of fact, it has been stated that postmortem findings reveal the surprising fact that 60 per cent of patients with carcinoma of the sigmoid die from obstruction before any metastasis occurs. Surgery for cancer of the sigmoid and cecum is very favorable for the reason that the intervening or filter lymphatics can be easily removed by surgical measures.

My work in surgery for cancer of the rectum dates back for more than twenty years. I was early impressed with the brilliant team work done by the two Mayos doing a combined abdominal and perineal operation, both working at the same time. I also was impressed by the fact that they had reduced the death rate in this radical operation in one stage to 25 per cent mortality with a certain number of three year cures.

Soon the two stage operation came in. The mortality was materially reduced. After this the operability increased. The more severe cases were taken on and the mortality rate again rose accordingly. But the one thing which impressed me was that, by the operation we were doing in the earlier days the patient finally succumbed to cancer. It had been my experience that hemorrhage and sepsis were the two principal causes of operative mortality. A two stage operation had already been adopted by various surgeons, particularly recommended by the Mayos. Their procedure was to make a simple colostomy; then at the second operation a posterior resection was done after removing the coccyx and a portion of the sacrum.

I followed this plan for a number of years, this being the best thing we know. Practically all the operative deaths came with the second operation from shock, due to hemorrhage, sepsis or a combination of both, for in this operation we not only opened up large connective tissue spaces, but also the peritoneal cavity. It also occurred to me that in this operation it was impossible to remove the upper lymphatics in the mesosigmoid. Therefore, I deliberately planned a two stage operation, in which most of the work was done at the first operation, for by this plan it was possible to remove not only the mesosigmoid but all the gland-bearing connective tissue in the hollow of the sacrum, under direct vision. By ligating and cutting the superior hemorrhoidal artery as it crossed the promontory of the sacrum, all the danger of hemorrhage was at once relieved.

In this connection it is well to recall that in the first four operated upon by this method, both internal iliacs were also ligated. One of these developed such an extensive phlebitis in all the pelvic veins that I abandoned the ligation of the iliacs and depended entirely upon ligation of the superior hemorrhoidal. However, it is interesting to note that two of the four, in whom the internal iliacs were ligated at the time of the first operation, lived more than twelve years after operation and died without recurrence, and the one who had the severe phlebitis is still living thirteen years after the operation in perfect health, at the age of seventy-six.

After abandoning the ligation of the internal iliacs, four additional operations were performed prior to the publication of the original technic in the *Annals of Surgery,* April, 1915. In this technic the principal features were the large incision through the right rectus muscle; thorough examination of the liver and all the retroperitoneal space as well as the immediate neighborhood of the growth for possible metastasis which would make the case inoperable; mobilization of the sigmoid by cutting the peritoneum of the mesosigmoid and double ligation of the superior hemorrhoidal artery; permanent colostomy through the left rectus muscle, using the proximal sigmoid; removal of the fat in the hollow of the sacrum; inversion of the distal sigmoid, whereby it was drawn out through the anus; closure of the peritoneal surfaces over all the denuded pelvic surfaces without drainage, thus completing the abdominal operation. This technic was, of course, limited to growths located in the ampulla of the rectum and to those which had sufficient lumen remaining to permit a rectal tube to pass the growth for the purpose of inverting the sigmoid.

While there was but one death in the original eight cases operated upon without drainage, the convalescence following the first operation was usually quite stormy, due to the fact that the connective tissue in the hollow of the sacrum, which had been devitalized by ligation of the vessels, usually sloughed as a result, an abscess developed and perforated into the rectum. It was, therefore, necessary to wait until this had taken place, so a plan for drainage appeared to be a necessity. This was found relatively easy in women, for a posterior colpotomy permitted the drawing of a large drain through the vagina which relieved the situation. But in order to do the same thing in male patients, it was necessary to leave an intraperitoneal drain, thus thwarting one of the principal objects of the primary technic.

After a closer study of the male pelvis, it was soon found that a drain placed in contact with the inverted rectum and drawn out through the lower end of the wound could be enclosed in a peritoneal canal, made by bringing the pelvic peritoneum together from the two sides above the drain. Thus the drain was extraperitoneal, although brought out through an abdominal wound. This solved the difficulty as far as dealing with clearly operable, nonobstructive cancer of the ampulla of the rectum was concerned, but was not applicable to those formidable cases, in which there was a stricture of the rectum proper or in those still more formidable rectosigmoid cancers which were too high for a low and too low for a high operation.

On being confronted by this type and location of a cancer of the rectosigmoid in the case of a very important individual who had a number of doctors in the family, I determined to apply these principles in another way and, therefore, after ligating the superior hemorrhoidal and mobilizing the rectum and sigmoid from the hollow of the sacrum even down to the tip of the coccyx, and also mobilizing it from the bladder and prostate, clamps were placed low down on the rectum, leaving but a small stub of the latter. The rectum was severed between the clamps and the growth brought up and removed, the colostomy performed and the operation completed just as in the original technic, except that the clamp on the stub of the rectum was allowed to remain and accompany the drain. Having succeeded with this technic in this type of case, I determined to apply the same principle in obstructive cancer lower down. By inclusion of these two latter classes, namely, obstructive cancer of the rectosigmoid and obstructive cancer of the rectum proper, the mortality has been decidedly increased. For while I was able to report my first fifty cases with a mortality of less than 5 per cent, the operative mortality, since these more severe cases have been included, is brought above 7 per cent in a total of almost one hundred cases.

The recurrences, of course, will be greater than in the original group of cases which included only nonobstructive carcinoma of the rectum. From the original report of eight cases with one death, I am able to show a record of four cases passing the five year period without evidence of recurrence, two of the four cases dying in the sixth year, two others living more than ten years, one of the two living into the thirteenth year in perfect health. The obstructive cases, of course, are farther advanced and, therefore, while we have not made a complete follow-up of these, we know very well that no such record as was shown in the first series of eight cases will hold good, when all the types of cases are included as we now do.

This only brings us back to the original statement that the only hope for cure in cancer of the rectum is early operation. Early cancer of the rectum is in my opinion among the most hopeful of all the cancers in the body, for the reason that its peculiar location makes it possible more thoroughly to remove the lymphatics than in other parts of the body. By beginning at the promontory of the sacrum and ligating the blood vessels and lymphatics at this point and removing all the fat in the hollow of the sacrum along with the rectum and fascia propria, one of the most ideal operations for cancer may be performed. I am entirely convinced that the prospect with cancer of the rectum as it comes to the surgeon of today is as good and more than likely better than carcinoma of the breast. Certainly much better than carcinoma of the uterus when treated by radical operation and many times better than carcinoma of the stomach.

On the basis of the foregoing remarks, we are justified in stating that cancer of the lip, large intestine, rectum and the breast are essentially surgical cancers because of a favorable anatomic location which permits of complete removal of the growth itself, as well as the lymphatic vessels and glands intervening between the growth and the blood stream, and also because cancer so located is detected early. Since it has become possible to transplant the ureters into the bowel by the tube method described in May, 1925 issue of NORTHWEST MEDICINE, it seems probable that the field of surgery in the treatment of cancer of the uterus and bladder may be legitimately extended. Surgery is the only effective method of treating cancer of the stomach but the percentage of curable cases reaching the surgeon is relatively small, owing to the fact that most cases occur along the lesser curvature, where obstructive symptoms do not develop until metastasis has already occurred; second, metastasis from cancer of the stomach takes place very early.

INOPERABLE OR UNSURGICAL CASES

Cancer may be unsurgical for the following reasons:

1. The growth may have existed so long that definite metastases are detectable.

2. The cancer may be so located that its complete removal is an anatomic impossibility.

3. The cancer may be so located that its direct extensions early involve important neighboring organs, the removal of which would involve an inconvenience or mortality that would make surgical removal undesirable.

4. The growth may be of a very malignant type (Class IV Broders), in which the ultimate result of surgical removal is very discouraging.

We have given carcinoma of the rectum as the most outstanding and major instance of purely surgical cancer. Carcinoma of the cervix has in the past been classed as belonging to the surgical group, from which even now it must not be entirely eliminated. It is generally conceded that early carcinoma of the cervix, in which the growth is entirely confined to the uterine tissues, must still be classed as a purely surgical condition. For some unexplainable reason radium in these early cases has been disappointing. As a matter of fact, it would seem that radium gives better results in later cases than in the very early ones. It has been suggested that a cancer which has been in existence for some time, and in which a secondary infection or necrosis has taken place, develops some kind of resistance which helps radium to fight the battle. Cancer of the cervix may be said to be the ideal field for the use of radium.

RADIUM MODUS OPERANDI

Overenthusiasm, born of insufficient knowledge or defective professional mortality, seems to be the bane of every worthy therapeutic agency. The faddist who jumps from one new hobby to another is very likely to retard the progress of medicine by discarding perfectly good agents before he has learned their value and how to use them. When radium was first introduced as a therapeutic agent, it was hailed by faddists as a sure cure for cancer. It was supposed by many to be almost magical in its effect, for under its use a large fungating, septic mass faded like snow in the warm sunshine. Those who had radium or the money to buy it were ready to drop all other agencies, particularly in cases of cancer of the uterus. And it was only after sufficient time had elapsed to demonstrate microscopically what had happened that we were able to estimate its true value.

What occurs after radium has been used? Lightly screened radium in large quantities is destructive to the tissues immediately surrounding it. Cancer cells coming within this destructive radius are destroyed just as if the cautery or knife had been used. As the distance from the radium increases its destructive powers diminish and fade into a severe irritation. This irritation produces an exudate which results in firm fibrous connective tissue. It diminishes as the distance from the radium increases and the fibrous connective tissue becomes correspondingly less.

It seems almost certain that very light doses of radium actually stimulate the growth of cancer, so that the same radium which destroys nearby cancer cells causes those at a considerable distance to grow and metastasize more readily. Therefore, we may say that, in a given distance away from a given amount of radium with a given amount of screeening, cancer will be destroyed. This destructive dose of radium would apply to the same type of cervix cancer that is curable by surgery. The area more remote from the radium undergoes a severe irritation, followed by connective tissue formation which may become so dense as to choke the small blood vessels and largely cut off the blood supply. In this fibrous connective tissue there are live cancer cells which are temporarily dormant and unable to multiply for lack of nutrition until such time as the fibrous connective tissue has been absorbed and new blood vessels have been formed.

The cervix is surrounded on all sides by vital organs (bladder, rectum and ureters) in close proximity. It is said that cancer cells, being immature body cells, are more easily destroyed either by heat or radiation than normal body cells. Cancer cells spreading from the cervix are soon in contact with or actually involve these structures, making it difficult to remove the cancer surgically without injuring these organs. Radium may temporarily imprison these cancer cells in fibrous connective tissue or possibly may actually destroy those so located to an extent that would be impossible by surgery. Because of the fact that in most cases cancer of the cervix has advanced to the stage just mentioned when the surgeon sees them, radium has been given preference over surgery, if only one of the two agencies could be used, although surgery in the very early cases is undoubtedly far better, but in the advanced cases radium has the advantage of not only destroying the necrotic tissue but also of imprisoning or possibly destroying cells farther than surgery can be applied, if due regard is given the important neighboring organs. Another drawback in the surgical treatment of cancer of the cervix is that the vaginal wall is frequently involved, making the surgical removal difficult and inefficient, while such location is ideal for the application of radium.

METHOD OF APPLICATION

Improper and inappropriate application of radium for cancer of the cervix has done much to counteract the good work that is possible by it for, unless the same care and knowledge are exercised in its use as in surgery, the same dangers and dire results may follow. Every surgeon, who has in his practice what Joseph Price very appropriately calls "surgical junk," meets many dire tragedies in this connection, such as destruction of the entire vagina, the wall of the bladder and of the rectum, in cases where there is no absolute evidence that the growth was even cancer. These results are usually produced by an x-ray technician who has incidentally bought a tube of radium and who in some instances knows scarcely enough anatomy and pathology to recognize a normal cervix.

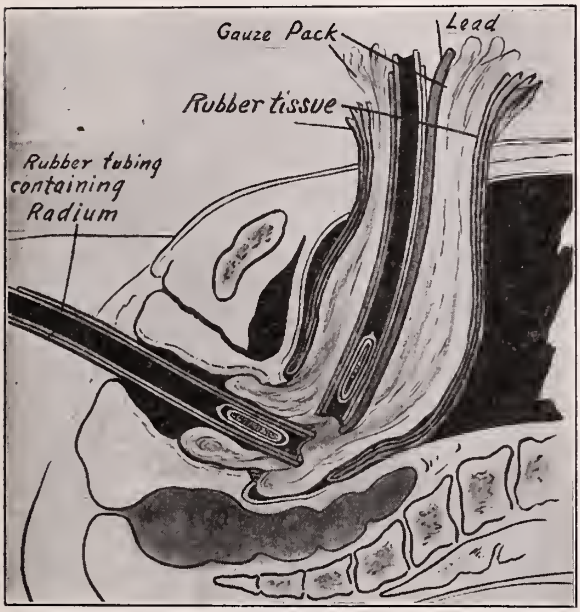

Fig. 1.

Fig. 1. Two 50 mg. tubes of radium left in wound after hysterectomy. The lower tube is passed through the vagina enclosed by two rubber tubes, one within the other, and held in place by gauze packed in from above. The other tube is placed back of the broad ligament screened by gauze, rubber tubing, lead which is interposed between abdominal cavity and radium and throws the rays back of broad ligament.

The good results also depend upon a number of things. For instance, it is often impossible to locate the cervical canal in a cauliflower cancer, involving the cervix and vaginal wall. The application of radium may completely destroy the visible portion of the cervix, imprison the more remote cells in connective tissue, but only stimulate still more remote cells which are far away from the possible effects of the radium. Radium treatment in such a case would, of course, be a temporary cure, the growth developing farther up in the uterus later on.

If at a certain stage the uterus is removed with the cautery from above, the peritoneum and broad ligaments brought over the opening and still more radium used from below, certain cases may be cured which would be failures by radium alone. I have in certain instances destroyed palpable cancer around the uterus by the application of radium from above, taking great care to pack the intestines away and otherwise screen the radium from the abdominal organs while it is in place (fig. 1).

In summarizing results in the treatment of cancer of the cervix by radium, we may state the following.

1. In cases of early cancer of the cervix, in which a close microscopic search indicates that the growth has not extended beyond the uterus itself, surgery gives splendid results, much better than radium alone, for in these cases it would seem that the latter has not been particularly effective. Unfortunately, this class is relatively small for cancer of the cervix is not often discovered early.

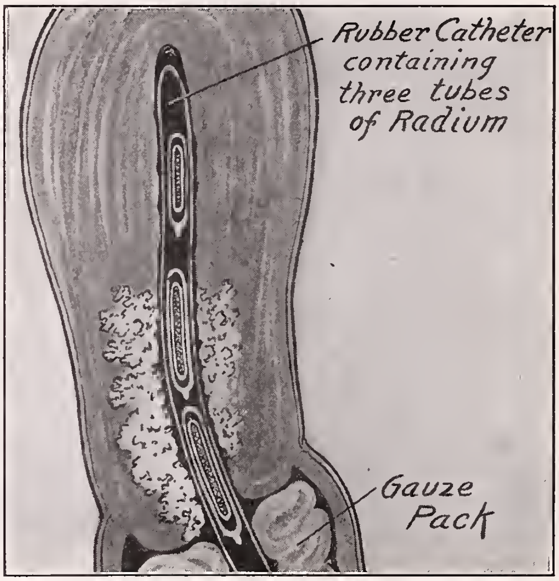

Fig. 2.

Fig. 2. Catheter containing 125 mg. of radium—two 50 mg. and one 25 mg. tubes.

2. If the cancer involves the entire cervix or extends down to the vaginal mucous membrane, even on one side of the cervix, the case must be considered as primarily a radium case. If the growth is on the inside of the cervix, and a No. 10 rubber urethral catheter can be passed into the cervix up to the fundus, the ideal method of application is as follows: In the hollow of the catheter near its eye is placed a 25 mg. tube of radium, enclosed in the ordinary silver casing. At a point in the catheter which would correspond to the internal cervix, a 50 mg. tube of radium is placed. An-

other 50 mg. tube is placed in the catheter at a point which will bring it in the center of the cancerous mass. The vagina is then packed with gauze in order to hold the catheter in the exact position (fig. 2). I usually leave this 125 mg. of radium in place twenty hours. This amount very often gives a decided reaction. Therefore, it is not left longer. A second dose is applied about two weeks later.

3. If the growth is limited to the cervix, the second dose may be applied by making a lead funnel of four thickness of 1 mm. lead, surrounded by soft rubber of the thickness of an ordinary inner tube, which is then surrounded with gauze, while a 50 mg. tube of radium is fastened in the funnel (fig. 3). This usually includes the ordinary brass container.

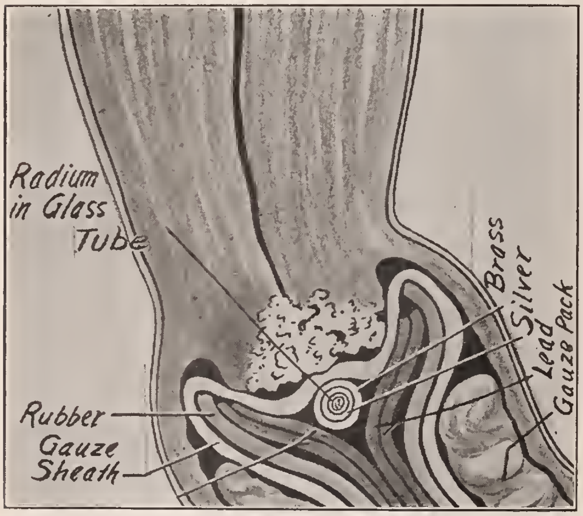

Fig. 3.

Fig. 3. Cauliflower cancer of the cervix with no involvement of the vaginal mucous membrane. Funnel is of lead, rubber and gauze to protect the vaginal wall and held in place by gauze pack.

4. If the growth is extensive and has formed itself into a crater, a 50 mg. tube of radium surrounded by brass, lead and rubber is sewed into a strip of gauze and packed into the cervix. Then the vagina is packed tightly with gauze so as to hold it in the exact position.

5. If there is a large cauliflower mass, in which no land mark is detectable, radium needles may be driven into the soft tissue at different points. A lead trough, 2 to 4 mm. in thickness and covered by rubber on the outside, may be slid along the posterior vaginal wall to protect the rectum in case one of the needles should fall out of place. In addition to the needles another 50 mg. tube may be applied in the gauze, well screened by rubber, lead, and brass and held in place by packing the vagina full of gauze (fig. 4). After such a growth has disappeared from below, the cervix is usually difficult to find and it is in such cases that the hysterectomy described before is recommended and performed. Of course, if the bilateral implantation of the uterus proves as successful an operation as it now appears to be, the field of application of radical surgery to cancer of the uterus may be greatly increased as well as that of radical surgery for cancer of the bladder.

INACCESSIBLE AND IRREMOVABLE SURFACE CANCERS

Around the neck, the jaws, parotid glands, in the groin there develop irremoval or unsurgical cancers which must be consigned to the field of radiotherapy. It would seem that deep x-ray therapy would have its field here, but in such cases it seems to have been disappointing. Several such cases have come into my hands who have had x-ray extensively applied by expert x-ray technicians, and in whom the cancer has not been checked but in whom the application of radium in the open wound without the intervention of the skin has been much more successful. This open method of application was suggested by Emil Beck of Chicago. It is a wonderful contribution as far as the destruction of cancer is concerned. But wounds thus treated and left open are very painful and remain open for many months or even years. As a matter of fact, sometimes they remain open until the cancer produces death elsewhere.

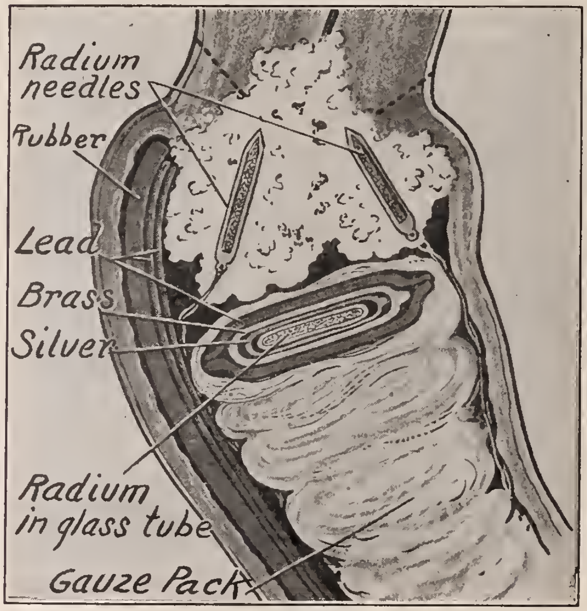

Fig. 4.

Fig. 4. Extensive cauliflower growth of the cervix, in which needles and tubes of radium are used directly in and against the growth, held in place by gauze. A lead and rubber trough shields the rectum.

On March 18, 1926, a rancher, 65 years of age, came to me with an extensive growth on his tongue, involving the tonsillar pillars, soft palate over to the uvula and having extensive involvement of the cervical lymphatics. He was having great difficulty in breathing and swallowing and as a matter of fact was near the choking point. He was at that time taking a grain of morphine a day to relieve the pain, and had been advised there was no hope at all. It was a case of admittedly forlorn hope.

On March 23, the patient was taken to the operating room and the following dictation made of the findings and procedure: "Preoperative diagnosis, carcinoma of the right side of tongue, involving the anterior facial pillars and glands of the neck just below angle of the jaw and the soft palate as far as the uvula."

Operation. The soft palate was anesthetized by local injection of novocain and a swab of cocain as a preliminary step. Right half of tongue was anesthetized with novocain. The needles were then inserted into the soft palate and it was cooked by Wyeth's endotherm. The uvula, which was quite edematous, was ligated and cut off. Long needles were then inserted into the tongue and electric current applied, cooking the tongue partially. The one particularly large opening was burned by a needle which went along the tongue to the base, beyond the part that was involved with cancer. Fifty mg. tube of radium, which had been inserted in a large trocar specially constructed, was then passed down in the center of the tongue and allowed to remain about fifteen hours. Two 12.5 mg. radium needles were inserted along the tongue higher up and allowed to remain fifteen hours. The patient was kept deeply under morphine during the time the needles were applied to relieve the pain. It is intended to repeat this process until the growth in the throat has been thoroughly treated and if possible destroyed by radium application.

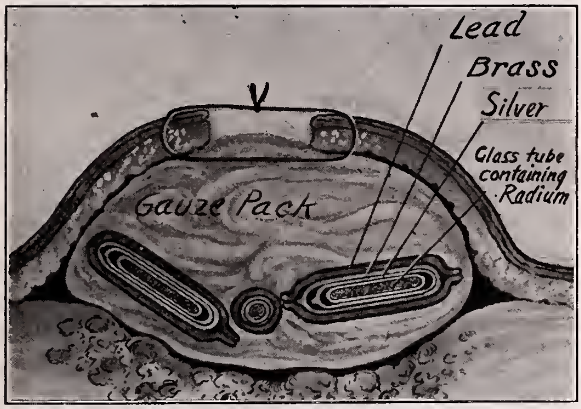

Fig. 5.

Fig. 5. Principle of placing large doses of screened radium in an open wound, in which the skin flaps have been dissected far back. The skin is held away from radium by gauze and the edges will be sewed together for primary union when the gauze and radium are removed.

On March 27 another application was made in the same way. On April 6 100 mg. was left in for eight hours, well screened and placed in the cavity from which the tongue had sloughed. In all, 3700 mg. hours were used in the dead half of the tongue and pharynx. In the meantime, about 7000 mg. hours were used on inch blocks on the outside of the neck.

The cervical gland, one of which was as large as a hen's egg, located just below the angle of the jaw, was very firm and fixed in the tissues of the neck. It was very evident that surgical removal was out of the question, as removal of this gland would without doubt open into the throat and mouth and create a permanent fistula. Therefore, a new plan was devised, based on the splendid results which had been received in former cases by the application of radium into an open wound by Beck's method.

An incision was made about six inches long from just below the tip of the mastoid to the median line of the neck, nearly an inch below the angle of the jaw. The skin was dissected upwards for two inches above and downward two inches below the incision. Two 50 mg. and one 25 mg. tubes of radium, enclosed in silver, brass, 1 mm. of lead and surrounded by the thickness of a rubber tube, were prepared. The bottom of the wound was laid with about six thicknesses of gauze, the screened tubes of radium were then arranged in the most effective manner around this glandular area. Gauze was packed over the radium, back under the skin flaps so as to hold the skin an inch or more away from the radium. Skin was then held by temporary sutures over the gauze, in the manner shown in the illustration (fig. 5). Thirty hours later sutures were cut, gauze and radium removed, novocain injected in the cut edges of the skin at the point where sutures were to be applied, after which they were inserted and wound closed.

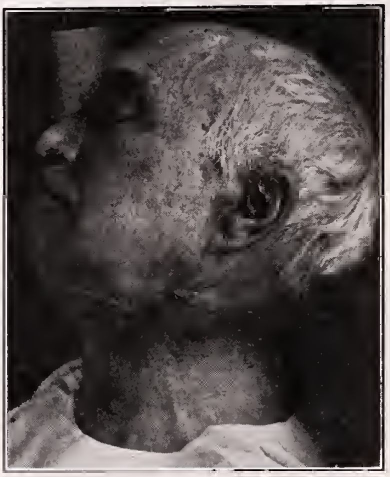

Fig. 6.

Fig. 6. Numeral 1 indicates healed wound following treatment of large cancerous mass with 4000 mg. hour doses of radium placed in the center of the mass. Picture three months after aplication of radium.

Thus 3700 mg. hours of radium had been applied in an open wound in a period of thirty hours and the wound closed for primary union which was perfect. The glandular enlargement in the neck entirely disappeared and had not come back something like six months after the application. Principle shown in fig. 5. We have used this method in more than a dozen instances and in all cases except two the union has been primary, and in those in which primary union did not take place, there was necrotic tissue present at the time of application.

This leads to the report of another case (male, 74 years of age, impossible risk for surgery), in whom a large growth the size of a man's fist on the side of the neck, proven malignant by microscopic exam-

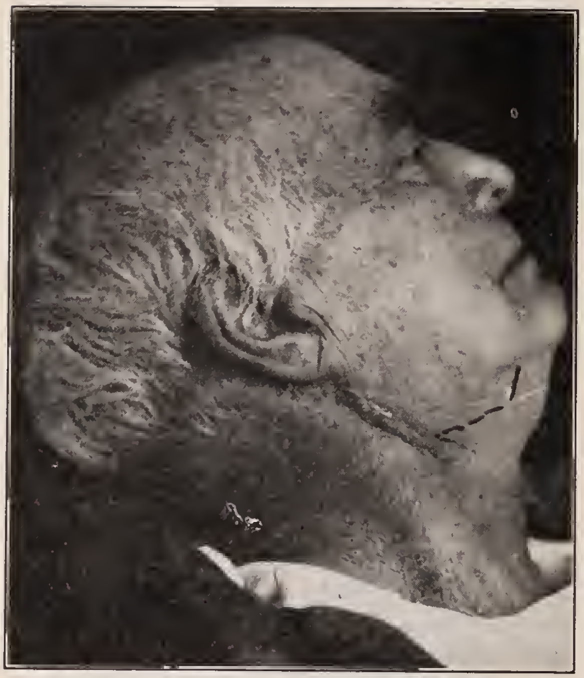

Fig. 7.

Fig. 7. Numeral 1 indicates incision on other side of neck for the treatment of large cancerous nodules which were not removed. Picture three months after operation. Nodules entirely gone.

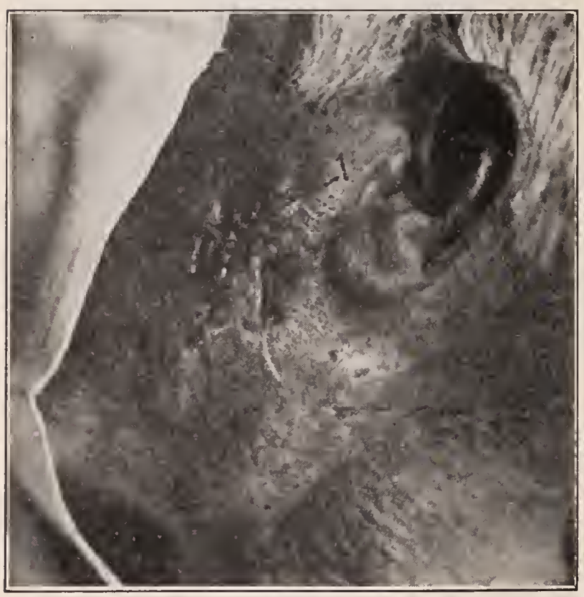

Fig. 8.

Fig. 8. 1. Carcinoma of the cheek removed by Wyeth's endotherm. First coagulation, then electrical knife. Three 12.5 mg. tubes of radium buried for twenty-four hours. Wound closed by primary union. 2, Wound made at same time for burial of 75 mg. of radium in the neck for thirty hours. Primary union in wound 2. Wound 1 suppurated and had to re-sewed, due to insufficient skin to cover the opening.

ination, and having a necrotic cavity holding necrotic debris sufficient to make a mass the size of a hen's egg, was treated by dissecting the skin under local anesthesia as described in the first case, and the application of about 4000 mg. hours applied in the open wound. Though part of this was necrotic, yet there was perfect primary union.

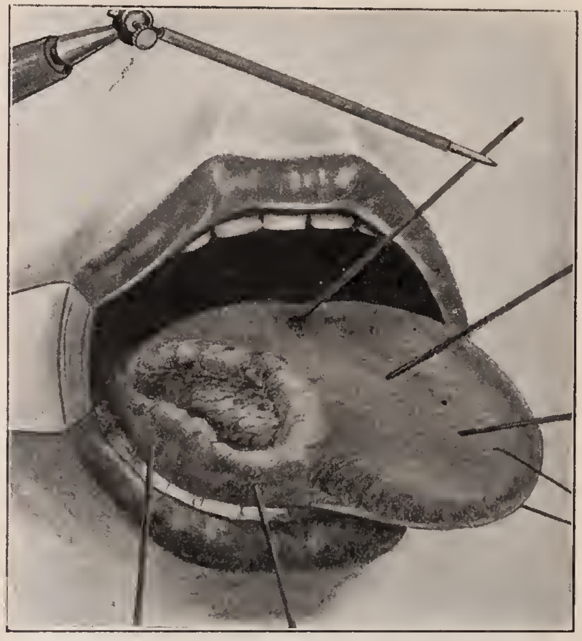

Fig. 9.

Fig. 9. Cancer of the tongue. Wyeth's electric endotherm point contacting with one of a series of long needles which have been inserted in different parts of the tongue. Note area of coagulation spreading from the contacted needle.

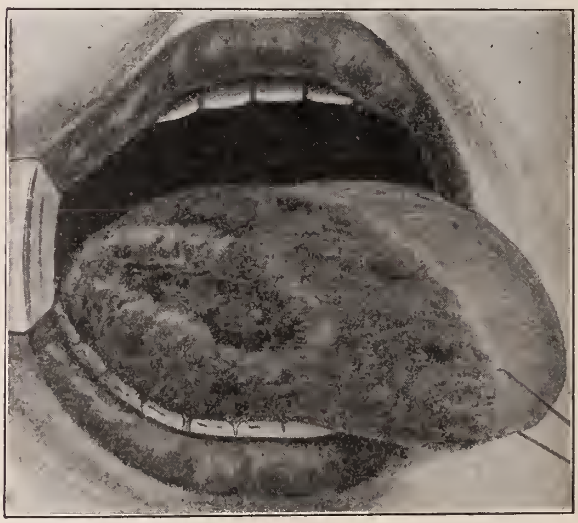

Fig. 10.

Fig. 10. Right half of tongue has been coagulated by electric currents.

The picture (fig. 6) shows a swelling still remaining on the neck. This, however, is receding three months after the operation and upon examination appears to be a lymph edema rather than cancerous infiltration. Fig. 7 shows the other side of neck in same patient.

We have had two other cases in whom necrotic areas existed and yet in whom primary union was obtained after the subcutaneous application of radium. Of course, the time is too short to predict the final outcome in such cases, being less than a

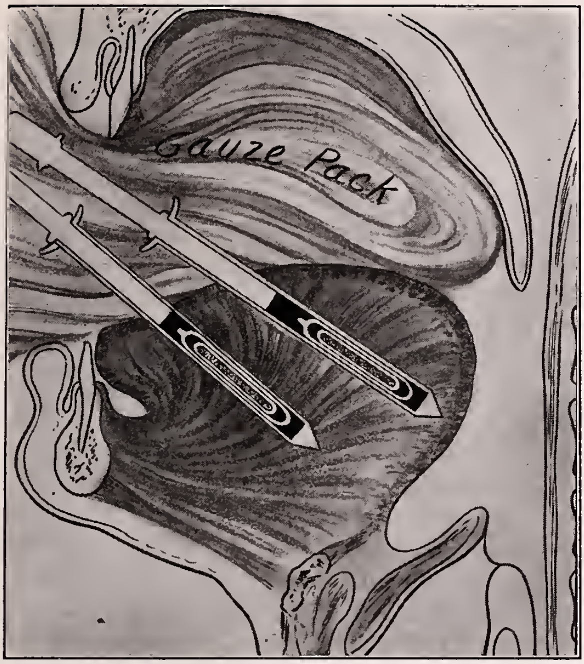

Fig. 11.

Fig. 11. Trocars have been converted into containers for 50 mg. tubes of radium which are driven into the coagulated half of the tongue near its middle. Mouth is packed with gauze and patient kept under morphine while radium is in place.

year since the first was treated. But the fact remains that we are able to apply large quantities of radium in a fresh wound, if it is well screened, and after the radium is removed, we can close the wound and get primary union, thus avoiding the danger of skin burn and at the same time use very large doses. There is one caution which may have to be considered. In two instances there seems to be a good deal of fascial contraction, following the application of radium in this way.

Following out the tendency of the faddist previously referred to, certain individuals have become enthusiastic over diathermy, endothermy and the electric knife or the hot cautery knife. It so happened that I purchased one of the large Wyeth's machines, when they were first introduced by Wappler, which is now more than two years ago. We find this machine very efficient in certain classes of cases, in surface or mouth cancers.

For cancer of the tongue it is par excellence. By use of this machine it is possible, under local anesthesia injected into the tongue and particularly in its center, to remove half of it with relatively little discomfort to the patient. In fig. 9 is shown a tongue which has been cooked by the Wyeth's endotherm, leaving the dead tongue in place as the medium for the introduction of large doses of radium. After the radium has been used, the sloughing mass may be cut away by the electrical cutting knife provided by Wappler to go with this machine. This is possibly the best apparatus that is in existence and yet it has distinct limitations.

Surface cancers may be surrounded by repeated needle punctures used to carry the electric current for coagulation, after which the cutting knife cuts away the dead tissue. The advantage of the coagulation current over the ordinary cutting knife is that there is no bleeding. Another very important place for the use of this Wyeth endotherm is in cancer of the inner canthus of the eye or even the outer canthus. Here the heat of the actual cautery knife is too great so near the eye.

Coagulation by the Wyeth current is ideal. Removal of epithelioma of the lip by this means is perfect and yet we must remember this is no panacea. It is simply a little better arrangement than the actual cautery and may be applied in certain places where the actual cautery is dangerous. On surface cancers it is better than radium or x-ray, in that after the burned tissue is thrown off, a nice healthy granulating surface for skin grafting is left. A wound after the use of the endotherm apparently is a healthier surface for skin grafting than one made by the actual cautery or one made by an open sloughing wound, although this may be incidental or imaginative.

Instrument dealers and faddists have been trying to make the electric knife a revolutionary piece of machinery. As a matter of fact, it is no such thing. It is simply one important instrument which is better under certain conditions than other things. In these surface cancers it must be remembered that radiotherapy has been a disappointment, and if an open wound is treated with radium, the surface is unfit for skin grafting.

My good friend Dr. Scott, of Temple, Texas, who is at the head of one of the half dozen greatest clinics of the country, was recently in the Northwest. As you may know, he is an enthusiast for doing all cancer dissections, particularly cancer of the breast, with the cautery knife which as a matter of fact is just as good as the electric knife. I prevailed upon him to operate before a group of doctors in my clinic. The first impression made upon me was that Dr. Scott is one of the most skillful surgeons I have ever seen manipulate instruments. As a sleight of hand performer in the operating room he deserves to class with Crile, Willard Bartlett and Judd. Any operation he might do would be thrilling to an interested spectator.

He removed a large, fat, cancerous breast with great skill with the cautery knife, even dissecting out the axillary glands around the axillary vessels with the skill of a magician. However, he frankly admitted that on more than one occasion he had injured the axillary vein. The wound healed fairly well. In some places union was not perfect and there was a larger amount of debris and discharge from the wound than ordinarily occurs after a breast amputation with the knife.

After the operation was completed, we had more time to think it over, and after I had performed some operations by Scott's method myself, I could not suppress the following soliloquy: If there are cancer cells outside the line of incision by the cautery knife, these will certainly grow just as rapidly as if the incision had been made by an ordinary knife. On the other hand, if all the cancer cells are included within the boundaries of the incision, the cancer is removed and the case is cured even with the cutting knife. So in the average clean case of cancer I am not convinced there could be a very great difference in the final results that could be attributed to the instrument making the incision, whether it be hot or cold.

Few men have the skill in surgery of Dr. Scott, and if his method were generally adopted by all kinds of surgeons and amateurs, the mortality, in my opinion, would be much greater than by the use of the ordinary knife. I am free to admit that if a member of my family had a cancer of the breast, I know of no one who could be more acceptable to me as a surgeon than Dr. Scott, but this decision would be made not so much because of the temperature of his knife, as of the skill with which he manipulates it.

In closing, I would like also to mention the very important contribution of Dr. Percy of Los Angeles. I have used his method in a number of cases, particularly of cancer of the cervix. It is undoubtedly true that his slow cautery is a great improvement over the other cautery. I think it is also true that his theory that the cancer cell is destroyed at something like 20 degrees lower heat than the normal tissue cells is very important. There are some things against the Percy cautery, most important of which is that in the hands of the average operator, other organs are injured by the heat. This has happened with me more than once. After all, the mere cure of cancer is not all there is to be considered. There is such a thing as a patient being left in a worse condition than death itself, and if there is another method which is practically as good without these dangers, it must be seriously considered.

TREATMENT OF CANCER OF THE CERVIX BY RADIUM*

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PORTLAND, ORE.

The writer feels some trepidation in offering this progress report of thirty cases of cancer of the cervix which were treated during 1924 and 1925. The following reasons, however, seem to justify its preparation: First, this method of treatment has not been presented before to this society; second, the general practitioner needs to be taught to recognize this disease earlier, and particularly to examine women patients promptly, when suspicious symptoms are mentioned; third, this series checks closely in its percentage of inoperable and hopeless cases with clinics over the country; fourth, there has developed in the past few years a rather general feeling in many clinics that cancer of the cervix no longer should be considered among those surgical conditions to be treated by operation.

In presenting this series I have tried to follow the general classification of primary operable, border-line, primary inoperable, hopeless or terminal, and recurrent cases. Defining these, "primary operable" means a case where the only disease is in the cervix; "border-line," where the growth has extended slightly into the vaginal wall or well up in the cervical canal and possibly also toward the broad ligaments; "primary inoperable," simply the addition to the previous class of more or less involvement of the parametria, the uterus being fixed; the "hopeless" type is that of the ordinarily-called "frozen-pelvis" with complications such as fistulæ, metastases, etc.; those labelled "recurrent" usually have simply a return in the vaginal scar with probability of extension into the broad ligaments, etc.

As you will note from Table 1, out of the thirty cases reported, only two are classed as "primary operable." Physical disabilities, such as fat, high blood-pressure, heart or kidney disease, changed the status of several patients as far as possible operability was concerned. Two-thirds of the cases re-

TABLE 1.

	No.	Path.	Type				Living	
	Cases	Report	2		3	4	1924	1925
Primary operable	2	1	....		1	....	1	....
Borderline	2	1	....	1	....	....	....	2
Primary inoperable	15	11	1		7	3	2	4
Hopeless	5	4	....		2	2	....	....
Recurrent inoperable	4	3	....		1	2	2	....
Prophylactic	2	2	....		2	....	....	2
TOTAL	30	22	1	1	13	7	5	8

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* Read before the Meeting of North Pacific Surgical Association, Vancouver, B. C., Dec. 10, 1926.

TABLE 2.

	Number 1924	Number 1925	Total	Radium Alone	Living & Exam., 1924	Living & Exam., 1925	Radium & X-ray	Living & Exam., 1924	Radium & Operation	Living & Exam., 1924	Living & Exam., 1925	1925; Living; Better Only	Lost—Dead?	Living—1924 Cases	Living—1925 Cases
Primary operable	2	0	2	1	....	....	....	....	1	1	....	....	1	1	....
Borderline	0	2	2	2	....	1	....	....	....	....	....	1	....	....	2
Primary inoperable	8	7	15	11	1	3	4	1	....	....	....	1	....	2	4
Hopeless	1	4	5	5	....	....	....	....	....	....	....	....	....	....	....
Recurrent inoperable	3	1	4	4	2	....	....	....	....	....	....	....	....	2	....
Prophylactic	0	2	2	1	....	1	....	....	1	....	1	....	....	....	2
TOTAL 1924	14	....	30	10	3	....	(3)	1	(1)	1	....	....	....	5	....
TOTAL 1925	....	16	....	14	....	5	(1)	....	(1)	....	1	2	....	....	8

ported were inoperable. Four were treated for recurrence, one following previous radium treatment and three for return in the vaginal scar or vault. Of two given prophylactic treatment, one was an early case followed by operation, and in the other the pathologic report showed that removal of growth was not complete.

Pathology. Table 1 also gives certain data as to biopsies performed and type of cell growth found. In twenty-two of the cases biopsy or tissue section confirmed the clinical diagnosis; the remaining eight had already been diagnosed by the referring physicians and agreed to by the writer. Much has been written pro and con regarding biopsy, but where treatment is immediately instituted it would seem that its advantages in deducing prognosis and treatment thoroughly offset its possible dangers.

Cell Type. An effort has also been made in this table to show cell-type according to Broders' classification. Study of the sections by a pathologist has shown the difficulty in clear-cut grouping. For example, one case having epithelial pearls should go in Class 2, but the balance of the section showed cells of the most malignant type, so this really belongs in Class 4. Not one of the thirty cases could be placed in Class 1, and only two in Class 2. This hints strongly as to the probability of unfavorable five-year results.

Age. The youngest patient was 28; 6 were under 40; 9 from 40 to 50; 5 from 50 to 60; and 9 were over 60, the oldest being 78.

Symptoms. Very few of these patients visited their physicians promptly on noticing some unusual condition. Only one appeared within one week, while one-third of the group went over six months before seeking medical advice. The principal symptoms were discharge or bleeding, appearing in almost equal number. Only three cases had other complaints, two of pelvic pain and one of loss of weight and strength. If you consider the pathologic condition, it must become clear that both discharge and bleeding are not in a true sense early signs, for even the cauliflower type of growth—that most prone to cause these symptoms—must attain considerable size and have been developing for some months before there is enough breaking down of tissue to show either symptom in any appreciable amount.

Treatment. The first thing to consider, and often the hardest question to decide, is whether a given patient should receive any treatment at all, for many of the cases in this report were absolutely beyond the scope of any procedure other than palliation. But when the result of the examination is told the relatives or the patient, and a bad prognosis given, it is very difficult to refuse the plea of giving a possible chance. So several in this list were treated against my better judgment and probably should have been left alone. However, one of my earliest cases, now living and free of disease for three years, belonged in this apparently "hopeless" group.

Table 2 gives the number of cases according to classification and to methods of treatment. Radium alone was used in twenty-four cases; radium followed by high-voltage x-ray in four; and in two operation was performed twelve and eighteen days following radium. These cases were both "operable" and the question might be raised as to the necessity for operation. The question as to whether radium alone is the best treatment for cancer of the cervix is still debatable, with worthy exponents on both sides. In large clinics where radium and high-voltage x-ray therapy can be combined satisfactorily, perhaps this plan will eventually yield the best final results. However, enough "five-year statistics" are at hand to show that there is not much choice in the two methods.

Treatment by radium originated as a palliative method only, to stop hemorrhage and lessen discharge and make the remaining life of the patient more bearable. Some of these patients showed a remarkable clearing up of the disease, so the field for radium has widened until now there seems to be a definite belief that it is the best treatment in cancer of the cervix; enough statistics of "five-year arrests" are on record to bear this out.

There should be no primary mortality from radium therapy, and complications, such as fistulæ, should be very rarely seen, the possible exception being in cases handled only with the thought of palliation, with extensive development of the disease toward bladder or rectum. Radium should not be used until experience has taught its dangers, for much of its bad repute is due to its application by physicians unacquainted with the proper technic.

Why has surgical opinion veered away from radical operation? Because of the primary operative mortality which is rarely below ten per cent among our best operators, and one can imagine how much greater when average surgery is done. Also because of sequelæ, such as adhesions or fistulæ, so that numerous patients would have died with less suffering had no operation been performed.

Method and Dosage. The patient is hospitalized and given an anesthetic to make a more satisfactory pelvic examination and thus to determine the necessary therapy. Tissue is removed for biopsy.

Fifty milligrams of radium in brass and rubber are applied in the canal or against the growth for twenty-four hours, with thorough vaginal packing to balloon away the bladder and rectum. Usually a second similar dose is given from two to four days afterward, and a third if the involvement is extensive. With vaginal involvement, either five or ten milligram needles are put through the growth about one-half centimeter from its base, or radon seeds of not over one-half millicurie strength are implanted about one centimeter apart.

Results. This paper simply reports the status of patients with cervical cancer, whose treatment was given in 1924 and 1925, and shows the clinical and cell-type classification. No claim is made as to permanent arrest and a final five-year report will no doubt decidedly change the present figures. However, the number of inoperable and hopeless cases should suggest more care on the part of the general practitioner in the study and treatment of women with lacerated and abnormal cervices, in the hope that cancer in this region will be more often seen in a less advanced stage.

CANCER OF TWENTY-FIVE YEARS DURATION

Harry H. Kretzler, M.D.
EDMONDS, WASH.

This case is of interest only in respect to the length of time patient suffered from the affliction.

Mrs. J. B. noticed a lump in her right breast in 1901 at the age of 40. On New Year's day, 1902, Dr. R. C. Seaman of Cherokee, Iowa, amputated the breast because of a diagnosis of cancer. Fourteen years later, in 1916, growths recurred in the scar of the operation. Various forms of medical and quasi-medical treatments were tried with little or no relief.

When she came under my care in 1924, she was able to sit up in bed, was in a fair state of nutrition, and was fairly comfortable. There were extensive metastases in the left breast, in the axilla, downward toward the navel, and up along the right side of the neck. The lung showed evidence of marked involvement. At the request of the patient she received a number of injections of colloidal gold, as recommended by Dr. Edward Ochsner. Shortly after this she became very much better. She was able to be up and around, had less dyspnea, the cancer masses in her neck "loosened up" so that she could turn her head more readily, and her general condition improved so much that she was able to make a trip ninety miles distant to visit her sister.

Early in 1926 she began to show signs of lack of resistance. She gradually lost weight, assumed the yellowish color so often seen in patients afflicted with cancer, and became bedridden. She died Sept. 29, 1926, twenty-five years after the onset of the disease.

Microscopic examination of tissue obtained at necropsy was made by Dr. D. H. Nickson, of Seattle, who made the following report and comment.

The specimen showed grossly the same characteristics as an adenoma of the breast. The microscopic sections, however, disclosed that it was not an adenoma but a carcinoma. The cells tended to group themselves in tubular formation, many of which contained a limiting capsule, as in normal breast tissue. Some of them showed multiplication of the layers of epithelial cells, filling these tubular structures so that they became cylinders. There were some masses which showed no basement membrane at all, the cells growing into the surrounding tissue freely, but everywhere in these masses there was a tendency to tubule formation.

In classifying this adenocarcinoma of the breast, according to Greenough (*Jour. Cancer Research,* 9:453, 1925), it would definitely be placed in group one. There was much differentiation of the cells with a marked tendency to tubular formation, and, according to this authority, this tumor would be of very low grade malignancy, forming metastases only late in its growth, if at all.

How far one can go in stating definitely the degree of malignancy or the rate of metastases from the microscopic picture, is still a matter for further study. One is constantly confronted with definite clinical evidence that there is marked difference in the malignancy of breast cancers. Whether or not this degree of malignancy can be microscopically graded according to differentiation of the cells, is yet a matter for proof.

RECENT ADVANCES IN PHYSIOLOGY*

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In this paper I desire to present those questions which are at present being most actively considered by physiologists, briefly outlining methods and results. Time does not allow me to enter into full consideration of the various subjects.

Donnan's Equilibrium. Since all physiologic phenomena are fundamentally dependent on the reaction of a cell to its environment, any contribution that throws light on this fundamental problem is welcomed by the student of physiology and medicine.

It is well known that cells are surrounded by semipermeable membranes, which some substances can pass through, others cannot. We know that some substances are absorbed from the intestines, others are not; some substances are excreted or secreted and others are not; the red blood corpuscles take up some substances and not others. A theory, which has already explained some physiologic phenomena and which it is hoped will assist in the explanation of absorption, secretion, excretion, and edema, has been applied by Loeb[1, 2] to the behavior of proteins. This theory teaches that, when two solutions are separated by a membrane permeable to some, but not all of the substances (ions) present, unequal distribution of the permeable substances (ions) occurs at equilibrium, because of the force that the nondiffusible substances (ions) exert on the distribution of the diffusible substances (ions) on both sides of the membrane. This force referred to is due to the difference in electric potential brought about by the unequal distribution of diffusible substances. Hence, a fourth force, difference in electric potential, is added to the three previously known forces, namely, diffusion pressure, hydrostatic pressure, and osmotic pressure, concerned in the passage of substances through the cell membranes of the body. Loeb[1] has predicted "that this theory will become one of the foundations on which modern physiology will have to rest."

The Red Blood Corpuscles as Carriers of CO_2. We have taught for many years that the red blood cell carries the oxygen and the blood plasma carries the carbon dioxide. Van Slyke[3] and his colleagues have shown that hemoglobin is under normal conditions the chief carbon dioxide carrier of the blood. The red blood corpuscle because of its hemoglobin content is almost as important as a carrier of carbon dioxide as it is of oxygen. From 80 to 95 per cent of the alkali that is furnished to neutralize the carbon dioxide that enters the blood from the tissues comes from hemoglobin. Oxyhemoglobin, because of its oxygen content, is relatively a strong acid. In the capillaries oxyhemoglobin loses oxygen and reduced hemoglobin, which is less acid, is formed. This process liberates alkali, or buffer, to neutralize the carbon dioxide that enters the blood in the capillaries. The red blood corpuscle, then, not only functions as a carrier of oxygen, but also as a carrier of carbon dioxide.

Circulation. Output of the heart. The observations of Henderson and Haggard[4, 6] and of Meek[5] have altered our former conceptions of the ouput of the heart and the rate of the circulation under conditions of rest and exercise.

Previously it was held that a variation in the stroke volume of the heart of 200 to 400 per cent occurs. But now it seems to be quite certain that the stroke volume in normal man or animal does not vary more than 20 to 30 per cent during ordinary activities. Meek has found that, as the heart rate increases beyond 110 per minute, the diastolic size of the heart decreases. This means that, if the stroke volume remains the same or is even slightly increased during the periods of muscular activity, there is less residual blood in the ventricles at the end of each systole during exercise that when the heart is working under conditions of rest. Therefore, in the normal individual the circulation rate is nearly proportional to the pulse rate.

Under normal conditions at rest the difference between the oxygen content of venous and arterial blood is 4 per cent, which means that the amount of blood the heart pumps in a minute is about equal to the amount of air breathed per minute (expired air contains 4 per cent less oxygen than atmospheric air). During exercise respiration increases eight or ten times and the circulation only four or five. The oxygen difference between arterial and venous blood then becomes about 8 per cent. If the exercise is increased still further, the oxygen difference becomes greater, because the circulation cannot increase. The oxygen difference between the arterial and venous blood, then, appears to be an index of the efficiency of the heart and circulation, the athlete standing at one end of the scale and the patients with heart disease at the other.

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Loewi's Experiment. Loewi[7] has found that, when the peripheral end of the vagus nerve is stimulated, the heart gives off a substance to the perfusing fluid which when applied to a second heart causes inhibition and when led to the stomach causes contraction, or in other words, has the same effect as is produced by stimulation of the vagus. Some have referred to this phenomenon as the "humoral transmission of nerve impulses." The significance of the observation, however, is questioned by the fact that the substance does not act when blood is used as a perfusing fluid.

Blood Pressure and Hepatic Extracts. One of the most important problems that confronts medical science today is the cause and treatment of essential hypertension. Although the problem has been and is being investigated, it is still far from being solved.

One observation which bears on this problem deserves mention and that is a liver extract, prepared by James, Laughton and Macallum[8] and by MacDonald,[9] which has the power of reducing artificially induced and clinical hypertension as well as normal arterial tension. Vincent and Sheen[10] first discovered this property of liver extract in 1903 and the depressor action of tissue extracts in general has been known for a long time. It has been thought that the active principle of these extracts was either histamine or choline. James, Laughton and Macallum, however, feel sure that the active principle of their hepatic extract is neither of these.

It would be very premature to argue from the basis of the blood pressure lowering action of hepatic extract that the liver plays a role in the regulation of blood pressure. Pharmacodynamic action does not necessarily mean physiologic function.

The Capillaries. Until several years ago functional peripheral resistance in the circulatory system was thought to be limited entirely to the arteriole, the capillary and venule being passive. The observations of Krogh[11] and Hooker[12] have led us to reorganize our ideas of peripheral resistance. Strong evidence has been discovered which shows the capillary and venule function actively and are responsive to both chemical and nervous influences. In a general way the chemical factors tend to dilate and the nervous factors to contrict the capillaries and venules.

In recent years the capillaries have been subjected to much clinical investigation. Definite changes have been found, but sufficient evidence has not been collected to warrant the statement that a certain condition of the capillaries is characteristic of a certain disease.[13] A normal standard for capillary morphology at different ages is lacking. Until this is determined we will be unable to correctly interpret and correlate many of the clinical observations on the capillaries.

Gastrointestinal Tract. Motor activity. Our idea regarding the effect of the vagus and splanchnic nerves on the gastrointestinal tract has been that the vagus carries inhibitory and the splanchnic motor impulses to the cardiac and pyloric sphincters, even though the reports in the literature have varied. Carlson and Litt[14] have shown that the response of these sphincters to nerve stimulation and to drugs depends upon the physiologic condition of the sphincters at the time the stimulus is applied. If the sphincters are relaxed, the stimulus causes contraction; if the sphincters are contracted, the sphincters are caused to relax. This observation has been confirmed by Thomas[15] and explains the discordant results reported in the experimental and clinical literature. It also shows that cardiospasm, or pylorospasm, may be due to reflexes over either the vagi or splanchnic nerves.

It was formerly believed that reverse or antiperistalsis normally occurred only in the proximal colon and abnormally in the stomach in vomiting. We know from the observations of Alvarez, Wheelon,[24] Keeton, Spencer, Carlson[25] and myself that antiperistalsis may occur in any portion of the gastrointestinal tract. Carlson[25] has recently observed it in the upper third of the esophagus in a case of esophageal stricture.

Carlson and Luckhardt[16] have presented evidence that hunger contractions are due to some change in the blood. Recently we[17] have shown that a transplanted gastric pouch shows hunger periods simultaneously with the stomach proper, evidence which unequivocally proves that hunger contractions are due to some humoral agency. It has been shown by Bulato and Carlson[18] that sugar metabolism is in some way related to the humoral agency, since glucose injected intravenously stops hunger contractions and insulin administration increases them.

Secretion. The advances in the field of secretion have been given previously.

Absorption. Proteins. Although normally most proteins are reduced to amino-acids before being absorbed from the intestine, there are at least two protein substances that are absorbed under normal conditions without being digested. One of these is thyroglobulin, which has been detected in the blood after feeding by Hektoen[19] by immunologic methods. The other is tissue fibrinogen, as prepared by Mills.[20] He has found that tissue fibrinogen, a substance that causes coagulation of blood, can be given by mouth, causing the coagulation time of blood to decrease for several hours, and then be obtained unchanged in the urine. It is well known that under certain abnormal conditions undigested protein may be absorbed from the intestine.[22] Hettwer and Kriz[23] have made recently an additional contribution by finding that increased intra-intestinal pressure caused by intestinal stasis may result in a sufficiently rapid absorption to cause anaphylactic shock in sensitized guinea pigs.

Nutrition. Workers in the field of nutrition now recognize five vitamines: "A," which is antixerophthalmic; "B," antineuritic; "C," antiscorbutic; "D," antirachitic; and "E," antisterilitic. It was formerly held that vitamine "A" and "D" were the same, but it is now known that, although they usually occur together, they are separate entities. Vitamine "E," which prevents sterility, was discovered by Evans and Bishop[26] and is found in fresh cabbage, lettuce and yellow corn meal. It is interesting to note that Steenbock and others[27] have cured nutritional anemia by the addition of the same natural materials as are used to prevent sterility. It has not yet been determined whether or not vitamine "E" is a factor concerned in the manufacture of hemoglobin.

The prevention and cure of rickets by ultraviolet light is well known to everyone. Two additional contributions have been made recently by Hess and others,[28, 29] namely, that cholesterol when exposed to ultraviolet light acquires protective properties against rickets and that the exposure of the lactating mother to it increases the antirachitic properties of the milk.

In the field of nutrition a very interesting and consoling discovery to those of us who reside in large cities has been made by Kohman and Eddy, namely, that commercially canned fruits and vegetables on the whole contain more vitamines than home cooked foods. The reason for this is that the prolonged cooking and exposure to oxygen, that occurs even when the rules for home cooking are followed, destroys much vitamine. Expert investigators have been and are instructing the canners how best to can foods in order to preserve the vitamines.

Urine Formation. A great contribution to our knowledge of urine formation has been made in recent years by Wearn and Richards.[31] They have been able to place a capillary pipette in the glomerular space of the frog's kidney and to collect glomerular urine. They found that this was protein-free, contained urea and also sugar at a time when the bladder urine was sugar-free, and had a chloride content greater than that of the bladder urine. This proved the assumption of earlier physiologists, that the glomerulus separates from the blood a protein-free, watery fluid, containing crystalloids, and that some of the crystalloids, sugar and chlorides, were reabsorbed in the tubules. Certain difficulties and possible errors attended their method. These have been avoided, however, by White and Schmitt,[32] who have used the glomerulus of the Necturus (mud puppy) which is larger than the frog's, making it possible to collect more urine in a shorter period of time and without any disturbance of blood flow through the glomerular tuft. They have also been able to collect urine from the proximal tubule. They have confirmed the findings of Wearn and Richards on glomerular urine and have further shown that sugar and chlorides are reabsorbed in the proximal tubule. They have presented evidence which shows that phosphates are probably eliminated only by the tubular epithelium. In these forms at least dyes are eliminated by way of the glomerulus. Another interesting observation made by Wearn and Richards is that all of the glomeruli do not function at the same time, as the capillaries of the glomerular tufts intermittently fill and empty, and that a diuretic causes more glomeruli to function.

The Biliary Passages. Recent investigations have at least proven that the gallbladder has one function namely, concentration of the bile. It also probably plays a role in the regulation of the intrabiliary duct pressure. That this is an important function in those animals that have a gallbadder is shown by the fact that the common bile duct dilates after removal of the gallbladder. Because of the small amount of smooth muscle in the wall of the gallbladder, it is more correct to say that it evacuates rather than contracts.

I would like to emphasize the point that very probably the most important factor controlling the outflow of bile from the gallbladder and biliary passages is the motility and tonus of the duodenum. This has been pointed out clearly by Burget.[33]

Liver. The recent studies of the liver by Mann and his colleagues have added much to our knowledge of that organ. We can summarize their findings as follows: (1) The liver is a vital organ. The cause of death after removal is unknown. Only a small percentage of the normal is sufficient to maintain life. (2) It plays an important, if not an essential role in sugar mobilization. (3) It forms all of the urea manufactured in the body. (4) It destroys uric acid. (5) It makes bilirubin, but other tissue cells (spleen and bone-marrow) can perform this function.

The Internal Secretion of the Pancreas. We are all aware of the wonderful achievement of Banting, Collip, McLeod and Best. More recently Abel[34] has apparently isolated insulin in crystaline form. Funk[35] has also isolated it in crystaline form and has given it the tentative formula, $C_{69}H_{102}O_{22}N_{18}S$.

Definite information is not yet available as to the exact role insulin plays in carbohydrate metabolism.

It has been found recently that when the pancreas is removed from the chicken, diabetes occurs, but lasts only a week.[36] The interpretation of this result is not yet clear, but it is thought that some other organ compensates for the internal secretion of the pancreas.

Thyroid. Hektoen, Carlson and Schulhof[37] have found by using the precipitin method that thyroglobulin is present in the lymph coming from the thyroid gland. This is the first time that thyroid gland substance has been demonstrated in a body fluid. This finding makes it appear as if Kendall's thyroxin does not represent the entire internal secretion of the thyroid. It may be the active principle, however, being split off from the thyroid-globulin in the tissues.

Parathyroid. The last few years have brought forth definite contributions to our knowledge of the parathyroids. Parathyroid tetany can be controlled at least by four methods, namely, intravenous administration of Ringer's solution, oral administration of calcium or strontium lactate, a lactose diet and Collip's extract. In view of the classical work of Collip and the evidence that has been coming from other sources, it is difficult to avoid the conclusion that the parathyroids give off a hormone that regulates calcium metabolism or mobilization.

Gonads. A very interesting and significant contribution to the study of sex is a chemical test of sex devised by a Russian physicion, E. O. Manniloff.[38, 39] By the application of this test to the blood of animals or the alcoholic extract of certain plants, the sex of the organism can be determined.

Frank and his colleagues[40] have prepared a rather highly purified substance from the follicular fluid, the corpus luteum and the placenta that when injected into animals causes changes in the uterus and vagina characteristic to the ovarian cycle. Allen and Doisy[41] have also prepared a substance from the follicular fluid. More recently Loewi and Frank and his colleagues[43] have demonstrated the presence of this substance in the circulating blood of women. This is the first demonstration by means of a specific test of the presence in the circulation of a hormone concerned with the production of changes in the uterus during the ovarian cycle.

Until recently the sole function ascribed to the scrotum was anatomic, namely, a receptacle for the testes. Moore and his colleagues[44] have shown that the scrotum has a physiologic function, namely, to regulate the temperature of the testes. This is essential for spermatogenesis in those forms that possess a scrotum. If the testicle is placed within the abdominal cavity, the germinal epithelium degenerates because the temperature of the abdomen is too high for spermatogenesis. Also, if the scrotum and contents are placed in an insulated bag so as to prevent heat-loss, the germinal epithelium degenerates.

The Nervous System. Definite contributions have been made in the last five years to our knowledge of the nervous system. The injuries received by soldiers in the World War revealed a number of interesting facts, and the investigators in this difficult field are active. Although facts have been discovered, they are difficult to state in a brief and concise manner, and in certain instances their interpretation is open to question.

In conclusion, it is apparent from this meager and incomplete attempt to bring to you the recent advances in physiology, that the physiologists are attacking fundamental questions, the solution of which will and does mean much towards the advancement of medical science, and that the past ten years have not been surpassed by any previous decade with respect to the importance and significance of the progress that has been made in physiology.

BIBLIOGRAPHY

1. Hitchcock: Phys. Rev., 4:505, 1924.
2. Loeb: Proteins and the Theory of Colloidal Behavior, New York, 1922.
3. Van Slyke: Phys. Rev., 1:141, 1921.
4. Henderson: Phys. Rev., 3:204, 1923.
5. Meek: Am. J. Phys., 70:393, 1924.
6. Henderson and Haggard: Am. J. Phys., 73:243, 1925.
7. Loewi: Klin. Wochen., 1:22, 1922; 2:1840, 1923.
8. James, Laughton and Macallum: Am. J. Phys., 75:392, 1926.
9. MacDonald: Proc. Soc. Exp. Biol. Med., 22:483, 1925.
10. Vincent and Sheen: J. Phys., 29:242, 1903.
11. Krogh: The Anatomy and Physiology of the Capillaries, Yale U., Press., 1922.
12. Hooker: Phys. Rev., 1:112, 1921.

13. Brown and O'Leary: Arch. Int. Med., 36:73, 1925.
14. Carlson and Litt: Arch. Int. Med., 33:281, 1924.
15. Thomas: Proc. Soc. Exp. Biol. Med., 23:748, 1926.
16. Carlson: The Control of Hunger in Health and Disease. U. of Chi. Press, 1917.
17. Farrell and Ivy: Am. J. Phys., 76, Mar., 1926.
18. Bulato and Carlson: Am. J. Phys., 69:107, 1924.
19. Hektoen: Kanai and Dragstedt, J. A. M. A., 84:114, 1925.
20. Mills: Am. J. Phys., 63:484, 1923.
21. Hettwer and Kirz: Am. J. Phys., 73:539, 1925.
22. Mathews: Physiological Chemistry, 3rd Ed., 453, 1921.
23. Hettwer and Kirz: Am. J. Phys., 73:539, 1925.
24. Wheelon: J. A. M. A., 86:326, 1925.
25. Carlson: Proc. Soc. Exp. Biol. Med., 23:771, 1926.
26. Evans and Bishop: J. Metabol. Research, 1: 319, 335, 1922.
27. Hart, Steenbock, et al: J. Biochem., 65:78, 1925.
28. Hess, Weinstock and Sherman: J. Biochem., 66:145, 1925.
29. Hess, Weinstock and Sherman: J. Biochem., 23:636, 1926.
30. Kohman and Eddy: Industrial and Engineering Chemistry, 18:85, 1926.
31. Wearn and Richards: Am. J. Phys., 71:209, 1924.
33. Burget: Am. J. Phys., 74:488, 1925.
34. Abel: Proc. Inst. Med., Chicago, Jan., 1926.
35. Funk: Science, 63:401, 1926.
36. Koppanyi, Ivy, Tatum and Jung: Am. J. Phys., 76:212, 1926.
37. Hektoen, Carlson and Schulhof: J. A. M. A., 81:86, 1923; Am. J. Phys., 71:548, 1925.
38. Manoiloff: Wratsch. Gaz., 1923, Nr., 15, 21, 22.
39. Gurewitsch: Münch. Med. Wchnsch., 71:1817, 1924.
40. Funk and Gustavson: J. A. M. A., 84:1717, 1925.
41. Allen and Doisy: J. A. M. A., 81:819, 1923.
42. Loewi: Klin. Wchnsch., 4:1407, 1925.
43. Frank and Others: J. A. M. A., 85:510, 1925; 86:1686, 1926.
44. Moore: Am. J. Phys., 77:59, 1926.

OBESITY AND THINNESS*

STUDIES ON THE SPECIFIC DYNAMIC ACTION IN THEM OF PROTEIN

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The conception of a specific dynamic action for foodstuffs was first developed by Rubner[1] who thought that the extra heat produced during the digestion and oxidation of protein, glucose or fat was derived from the intermediary metabolism of the foodstuffs themselves. That this conception is in part erroneous has been shown by the studies of Lusk and his associates. They have proven that in the case of protein:

1. The process of deamination and urea formation has no effect upon heat production.[2]

2. The amino-acids, glutamic and aspartic, have no specific dynamic action,[3, 4] while glycocoll and alanin in a normal dog cause a marked increase of heat production.[5]

3. The specific dynamic action of glycocoll is independent of its oxidation.[5] This is termed "the experimentum crusis" by Lusk.

These facts prove that the specific dynamic action of protein, contrary to Rubner's conception, is not inherent in the oxidation of the amino-acid itself, but that certain amino-acids in the process of their oxidation cause a specific stimulation which raises the cells to a higher level of heat production. This is defined by Lusk as "the metabolism of amino-acid stimulation."

PAST STUDIES

The possibility of there being an abnormality as regards the specific dynamic action of protein in certain cases of obesity was first reported in 1900 by Jaquet and Svensen.[6] They found that after a miexd meal in three cases of obesity the rise in heat production was less and of a shorter duration than in their normal controls. Means[7] in 1915 failed to obtain any abnormality in the specific dynamic action of protein in one case of obesity. Plaut[8] in 1922, using a mixed meal containing 200 grams of minced beef, 50 grams of fat, 200 grams of bread, and 500 c.c. of coffee, reported twelve cases of "constitutional obesity," in eleven of which he found a diminished specific dynamic action as compared with his control group. Plaut's results were confirmed in 1924 by Liebesny[9] and Wang and Strouse,[10] the latter using a pure protein meal.

PRESENT INVESTIGATION

The present investigation is the report of studies upon a series of "so-called" exogenous obesity, hypophyseal obesity and "constitutional thinness," controlled by normal individuals. A determination of the elevation of heat production at hourly intervals was made after a meal consisting of 200 grams of lean beef.

Methods. All the patients were hospitalized during the days of observation, and care was taken that the basal state was maintained throughout the experimental periods. After a preliminary determination of the basal metabolism in the early morning hours the meal was given, and the total metabolism was subsequently determined at hourly periods for four hours. The expired air was collected in Douglas bags, the volume determined by

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TABLE 1
SPECIFIC DYNAMIC ACTION OF PROTEIN. NORMAL

Serial No.	Sex	Age	Weight	Basal Calories per hour	Basal Calories per sq. m. per hour	PERCENTAGE INCREASE OF HEAT PRODUCTION				REMARKS
		YEARS	KILO			1 Hr.	2 Hr.	3 Hr.	4 Hr.	
1 (B)	F.	26	40.45	44.48	31.2	+ 9.3	+ 19.2	+ 20.8	+ 18.6	Beef: 200 gm.
2 (H)	F.	23	39.77	49.28	37.1	+ 3.2	+ 13.5	+ 15.1	+ 18.3	Beef: 200 gm.
3 (R)	M.	41	63.86	54.62	31.8	+ 7.8	+ 12.9	+ 16.7	+ 18.9	Beef: 200 gm.

TABLE 2
SPECIFIC DYNAMIC ACTION OF PROTEIN—OBESITY—"EXOGENOUS" TYPE

Serial No.	Sex	Age	Weight	B. M. R.	Basal Calories per hour	Basal Calories per sq. m. per hour	PERCENTAGE INCREASE OF HEAT PRODUCTION				REMARKS
							1 Hr.	2 Hr.	3 Hr.	4 Hr.	
		YEARS	KILO	PER CENT							
4 (El)	F.	36	108.18	— 6.9	72.77	34.0	+ 5.6	+14.4	+12.1	+11.1	Beef: 200 grams
"	F.	36	97.04	— 8.8	68.20	33.3	+ 1.8	+ 8.1	+13.2	+ 7.8	Beef: 200 grams
"	F.	36	93.17	—12.3	63.43	32.0	+ 5.6	+ 7.2	+10.6	+ 5.3	Beef: 200 grams
5 (We)	F.	48	88.41	— 8.1	62.20	33.1	0.0	+ 8.2	+12.7	+15.4	Beef: 200 grams
"	F.	48	83.86	—21.0	50.26	28.4	+ 1.1	+ 7.4	+ 0.7	0.0	Beef: 155 grams
6 (Ha)	F.	26	74.77	— 3.0	65.44	38.1	+ 0.1	+ 2.6	+ 4.4	+ 7.8	Beef: 200 grams
7 (Le)	F.	44	91.81	— 7.5	65.26	33.3	+ 4.2	+13.2	+12.6	+12.0	Beef: 200 grams
8 (Em)	F.	26	92.59	—11.9	60.60	32.6	+12.9	+16.5	+11.0	+15.9	Beef: 200 grams
9 (Ki)	F.	35	73.63	— 1.4	62.80	36.0	— 2.9	— 6.2	—11.3	+ 4.7	Beef: 200 grams
10 (Go)	F.	51	74.84	+10.0	69.82	38.5	0.0	— 7.5	+ 7.0	—18.3	Beef: 200 grams
11 (Pr)	F.	35	93.63	+15.0	80.79	42.3	— 2.6	+ 1.7	+ 0.7	— 2.6	Beef: 200 grams
12 (God)	F.	33	91.35	—14.8	59.25	31.1	+ 5.5	+ 9.6	+ 6.1	+ 9.2	Beef: 200 grams
13 (Ka)	F.	24	110.68	—13.5	66.96	32.0	— 6.6	+13.0	+14.1	+12.2	Beef: 200 grams

a wet meter, and gas analyses completed in duplicate on Henderson-Haldane gas machines. Fluid intake was kept constant at 200 c.c. per hour. Urines were collected at hourly periods, nitrogen being determined by the Günning modification of the original Kjeldahl technic. From the nonprotein respiratory quotients an estimation of the nonprotein calories was made according to the tables of Zuntz and Schumberg as modified by Lusk.[11]

THE NORMAL REACTION

The normal adult individual has a fairly uniform elevation of heat production after a meal of 200 grams of lean beef. The maximum elevation of heat output is obtained in the third or fourth hour and then falls gradually to the basal level. In a series of three normal control cases the maximum percentage increase of heat production over the basal level varied from 18.3 to 20.8. The experimental data are tabulated in Table 1.

OBESITY—SIMPLE

The term simple or "exogenous" obesity is usually meant to include that type of obesity in which there is no known internal secretion at fault, but in which there has been a marked disproportion between energy intake in the form of food and the expenditure of heat. In such cases the basal metabolic rate should be within the normal limits of variability.

In a study of ten cases of this type as recorded in Table 2 and depicted graphically in Chart 1, the increase in heat production over the basal level after a meal of 200 grams of lean beef has been consistently less than in the normal control group (see Table 1). In only one case, No. 8, was the increase of heat production more than fifteen per cent. That this experimental finding persists during a period of reduction upon a subcaloric diet, associated with a falling basal metabolism, is shown in cases 4 and 5, in which multiple observations are recorded. That this decreased specific dynamic action of protein persists for a prolonged period in certain cases of obesity is indicated by the findings in case 9, who two years previously had been "reduced" by one hundred pounds, the decreased weight having been maintained during the interval.

TABLE 3

SPECIFIC DYNAMIC ACTION OF PROTEIN—OBESITY—HYPOPITUITARY TYPE

Serial No.	Sex	Age	Weight	B. M. R.	Basal Calories per hour	Basal Calories per sq. m. per hour	PERCENTAGE INCREASE OF HEAT PRODUCTION				REMARKS
							1 Hr.	2 Hr.	3 Hr.	4 Hr.	
		YEARS	KILO	PER CENT							
14 (Ha)	F.	21	85.23	— 9.8	63.77	33.4	+ 0.4	+ 3.2	+ 6.3	— 4.8	Beef: 200 grams
"	F.	21	84.54	— 9.9	63.51	33.3	+ 4.8	+ 9.3	+ 9.6	+ 2.1	Beef: 200 grams
15 (Di)	F.	31	85.68	+ 1.4	70.33	37.0	+ 0.5	+ 8.4	+ 4.8	+ 2.7	Beef: 200 grams
"	F.	31	83.74	+ 4.1	72.66	38.0	+ 0.8	+ 3.1	+ 1.0	+ 4.4	Beef: 200 grams
16 (As)	M.	13	50.23	—15.0	63.00	42.5	+ 1.2	+ 2.6	+11.7	+14.6	Beef: 150 grams
17 (De)	F.	23	48.86	+ 5.4	55.82	39.0	+ 1.8	+ 6.2	+ 4.4	— 0.5	Beef: 200 grams
18 (O'D)	F.	39	80.68	— 4.7	60.00	34.8	+ 2.9	+10.0	+ 8.7	+ 3.3	Beef: 200 grams

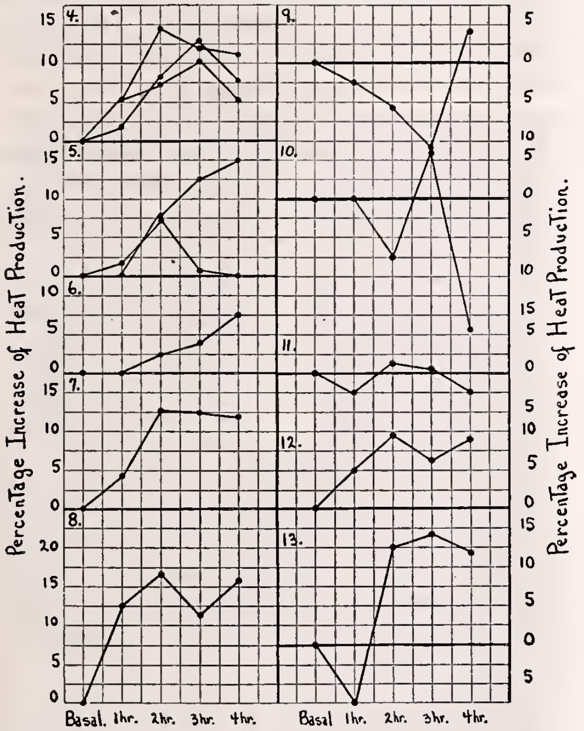
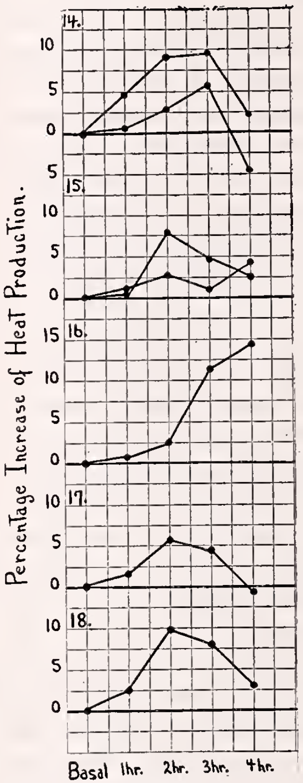


Chart 1. Specific dynamic action of protein in obesity of "exogenous" type.



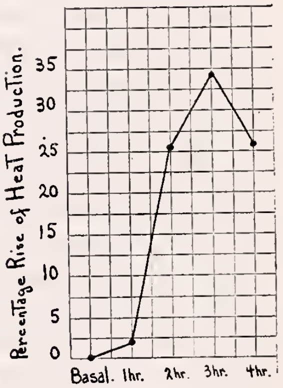


Chart 2. Chart 3.

Chart 2. Specific dynamic action of protein in obesity of hypopituitary type.

Chart 3. Specific dynamic action of protein in a case of "constitutional thinness." Male. Age 51. Height 174.3 cm. Weight 48.4 kg. Surf. Area 1.575 sq. m. Heat production after 200 gms. of lean beef.

It should be noted that cases 8, 11, 12, and 13 had basal metabolic rates which fell slightly outside of the Sage Institute Standards of deviation of +/— 10 per cent. In no case was a 15 per cent variation exceeded. In these cases a careful examination failed to disclose an "endogenous" cause for their obesity.

OBESITY—HYPOPITUITARY TYPE

A study of five cases of the hypopituitary type of obesity gave findings practically identical with so-called "exogenous" obesity. These results are presented in Table 3 and Chart 2. In all cases there was a marked decrease in the normal specific dynamic action of protein after 200 grams of lean beef. In only one case, No. 16, did the increase of heat production over the basal level exceed ten per cent. In cases 14 and 15 the observations were repeated upon two occasions with the same results.

In only one case, No. 16, of this series was the basal metabolic rate below normal, as is usually found in this type of obesity. Nevertheless, the clinical and laboratory examinations indicated that there was a functional disturbance of the pituitary.

"CONSTITUTIONAL THINNESS"

There is a group of individuals who are in good health but remain thin and lean in spite of a large consumption of food. They are free from clinical symptoms. They might appropriately be classified as "constitutionally thin." A study of one such case has shown an exaggerated specific dynamic action for protein (Chart 3). The maximum increase of heat production over the basal level after 200 grams of lean beef was 34.2 per cent in the third hour, and from the second to the fourth hours the heat production remained elevated more than 25 per cent above the basal level.

DISCUSSION

From the reported data the earlier observations of Jaquet and Svensen, Plaut, et cetera, that there was an altered specific dynamic action for protein in obesity, would be confirmed. In these experiments a uniform protein meal was employed. The finding is present in the same degree in both simple obesity and obesity secondary to an hypophyseal disturbance. That it persists for at least two years after a marked reduction in weight was found in one case.

This decreased specific dynamic action for protein in obesity would result in a marked conservation of heat by the individual, thereby tending towards a gain in weight. It would seem logical that the cause for the lack of specific dynamic action is constitutional, as there is no evidence of a perverted amino-acid metabolism. If such is the case, many of the cases of so-called simple obesity are really "endogenous" obesity, one fundamental cause of which we do not understand.

Plaut[8] in 1922 reported that in three cases of "constitutional thinness" there was an increased specific dynamic action for protein. The one case recorded in this paper would tend to confirm his findings. This increased wastage of heat may be a factor in maintaining the individual below the normal weight.

CONCLUSIONS

A series of studies upon the specific dynamic action of protein are reported which show that:

1. In so-called simple obesity the specific dynamic action of protein is much decreased (ten cases).

2. In obesity of the hypophyseal type there is also very little specific dynamic action for protein (five cases).

3. In one case of "constitutional thinness" there is an increased specific dynamic action for protein.

(Bibliography, omitted for lack of space, will appear in reprints.)

DISTURBED GLUCOSE METABOLISM*

OBSERVATIONS, WITH ETIOLOGIC SIGNIFICANCE

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An approach to an understanding of the metabolic functions of the body may be made through a number of different channels, and according to the experiences encountered in the particular route of choice, one's conclusions will be formed. The pathologist holds his views in accordance with what the autopsy table and microscopic permit him to demonstrate in the way of fixed anatomic changes. His conception of disease is static, based upon the structural changes which are found, following an acute or chronic influence upon tissue. The chemist follows the body reactions in a test tube, and draws conclusions concerning function from these reactions. Between the reactions demonstrable in the chemist's test tube and before the demonstration of the pathologist, there occurs a continuous progression of body changes both in tissue structure and chemical reaction.

This continual change is manifest very clearly in the metabolic processes of the body. Here there is constant fluctuation. Each meal carries into the body its quota of carbohydrate, protein and fat, vitamines and minerals, which are acted upon by the glandular secretions and reconstructed so as to give energy or repair waste.

In observing numbers of cases passing through these metabolic transitions, both from a clinical and laboratory standpoint, certain characteristics have presented themselves. It is the purpose of this paper to pass on these observations as they have occurred to the author.

NORMAL GLUCOSE METABOLISM

According to the studies of Woodyatt, all of the carbhoydrates of the dietary, a possible 58 per cent of the protein, and 10 per cent of the fat are converted into glucose, and metabolized within the body. All of the chemical reactions occurring in this catabolic and metabolic process are not known. Certain steps, however, may be definitely followed.

If the normal individual is given one and three-fourths grams of glucose for each kilogram of body weight, he will be found to metabolize this amount of carbohydrate in three hours time. During the time that this glucose is being conveyed from the gastrointestinal tract to the liver and muscles for storage and consumption, there is a rise of the sugar content of the blood. If the changes which occur in the blood sugar content during a three-hour interval, associated with the ingestion of a test meal as suggested above are observed on an hourly basis, under fixed expenditure of energy output, they will present, first, the normal blood sugar level (from 90 to 120 milligrams per 100 cubic centimeters of blood); second, a marked rise which is followed by a sharp decline. Within three hours after the ingestion of the meal, the blood has performed its part of transportation and cleared itself of the excess glucose. This occurs following each ingestion of food and is spoken of as the period of "postprandial hyperglycemia."

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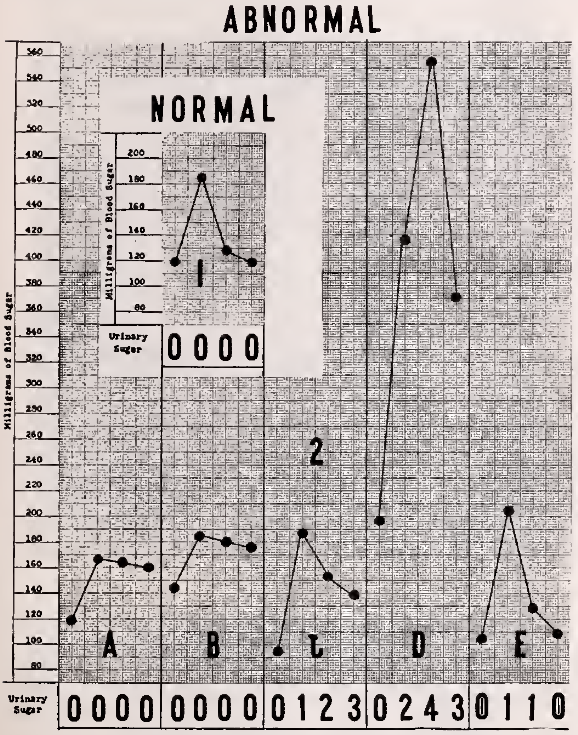
* Read before the Thirty-seventh Annual Meeting of Washington State Medical Association, Spokane, Wash., June 28-30, 1926.

During this normal rise of the blood sugar, no sugar appears in the urine. The kidney acting as a threshold prevents the passage of sugar through its tissues, and gives the liver and muscles opportunity to store or metabolize their quota.



Figs 1 and 2.

If we present the laboratory findings of what occurs during the transition of this phenomenon they will be as follows (fig. 1). No glycosuria appears at any of the hourly intervals.

ABNORMAL METABOLISM OF GLUCOSE

The abnormal metabolism of glucose when viewed from the standpoint of the glucose test meal shows distinct characteristics.

(a) There is the disturbed metabolic process which presents a normal blood sugar reading, following a twelve-hour fast, but the blood sugar readings following the test meal do not return within the allotted three-hour interval.

(b) In contrast to this there is the disturbed glucose metabolism which has an initial high blood sugar reading, associated with inability to return to normal during the allotted three-hour interval.

(c) The characteristics described under the first heading may be present without an accompanying glycosuria, or with a glycosuria as shown under C.

(d) The characteristics described under the second heading may be present without an accompanying glycosuria, or with a glycosuria as shown under D.

(e) There may be a normal response to the glucose test meal, with glycosuria present in four specimens obtained simultaneously with the blood sugar readings (fig. 2).

The variance of the abnormal response to the glucose test meal is great. Some conception of this variance may be gained by a view of a composite chart graphically illustrating the response to thirty glucose tolerance tests (fig. 3).

DISTURBANCE OF GLUCOSE METABOLISM WITHOUT TYPICAL SIGNS OF DIABETES MELLITUS

The definition of diabetes mellitus is, "A disease of metabolism marked by an abnormal amount of sugar in the blood (hyperglycemia), and by the passage of an excessive amount of sugar (glycosuria). It is attended by thirst, enormous appetite, emaciation and loss of strength." If a rigid clinical application is made of this definition, many instances will be found where only part of its requirements are met. Glycosuria may exist without the other symptoms of the syndrome, and hyperglycemia may exist without glycosuria.

At the present time considerable stress is laid upon the manner in which the glucose test meal is metabolized by the individual. If the test meal is properly disposed of in the allotted period of time, there obviously is no disturbance in the glucose metabolism.

In the routine examination of cases with disturbed glucose metabolism certain peculiarities presented themselves which are offered for your consideration.

DISTURBED GLUCOSE METABOLISM IN ARTHRITIS

One of the common symptoms prevalent among cases of diabetes is pain along the distribution of peripheral nerve tracts, particularly in the extremi-

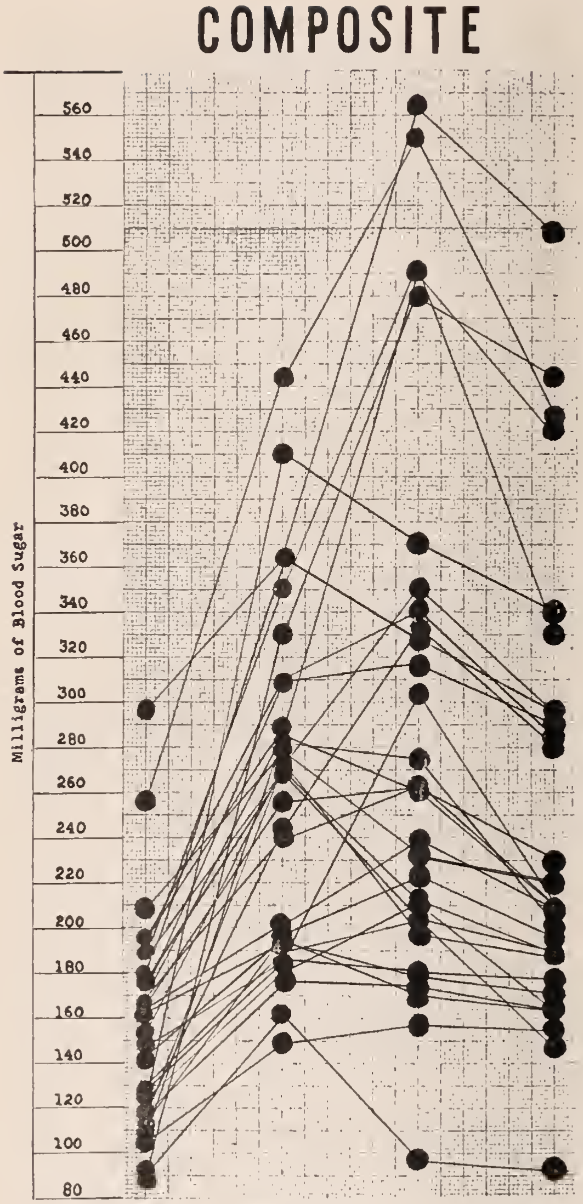
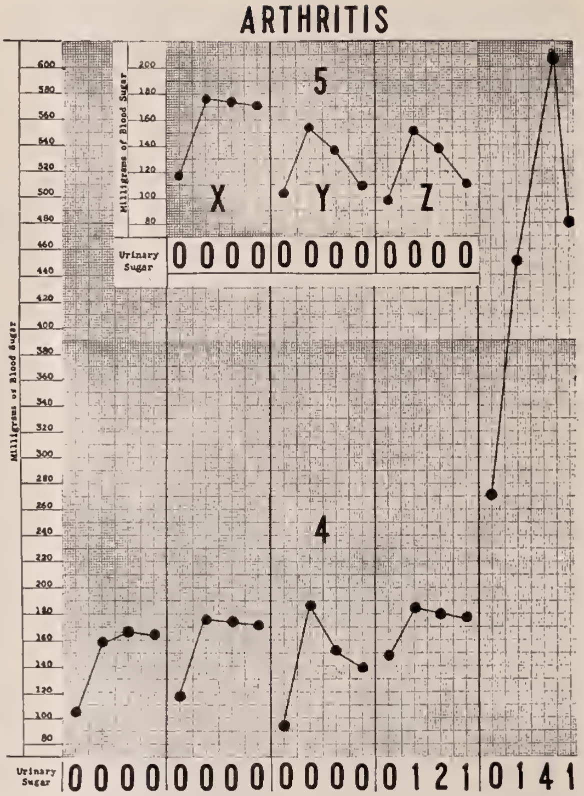


Fig. 3.

ties, and pain and stiffness in the joints. These symptoms have repeatedly disappeared with the lowering of the blood sugar levels, and such a state has been maintained by adequate dietetic and therapeutic management.

This improvement in the diabetic individual was so marked that a group of cases of arthritis were studied on the basis of their response to the glucose test meal usually administered to cases of diabetes. The response to this test meal was definitely abnormal, showing that this group of cases were having distinct difficulty in the metabolism of glucose. The cases chosen for these observations have had severe clinical manifestations. In seven instances observations were made in this manner, and



Figs. 4 and 5.

in all there was evidence of distinct abnormality. Five of the seven records are submitted for consideration (fig. 4).

None of the cases here recorded presented glycosuria at the initial examination, and but two presented this phase of disturbance during the glucose test meal.

One observation of this group deserves special consideration.

It is in a woman fifty years of age who suffered severely from arthritis. The clinical symptomatology was pain in the joints, principally knees, and contraction of the flexor tendons of the leg muscles. The first observation of a metabolic nature was made on December 27, 1924, and is represented in fig. 5 (x). Here is seen a distinctly abnormal response. After seven months of care the test was repeated, showing a marked improvement in the manner in which the body metabolized the second test meal (y).

A third check (z) was made on May 3, 1926, sixteen months after the first observation, and shows a continuation of the improved glucose metabolism. The clinical symptomatology has cleared up to such an extent that the individual feels she is cured of her difficulty, and there is good laboratory evidence to substantiate her view.

Here is an instance of arthritis associated with disturbed glucose metabolism, and a subsequent improvement in the glucose metabolism approximating normal. This instance presents the most definite improvement of any of the group, but every case has shown improvement.

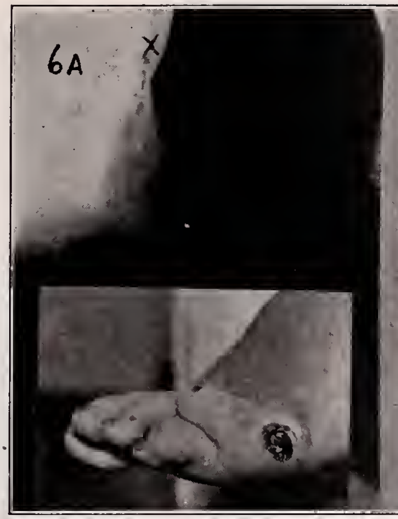


Fig. 6.

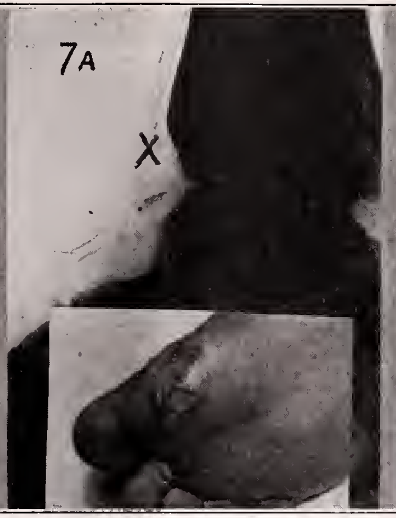


Fig. 7.

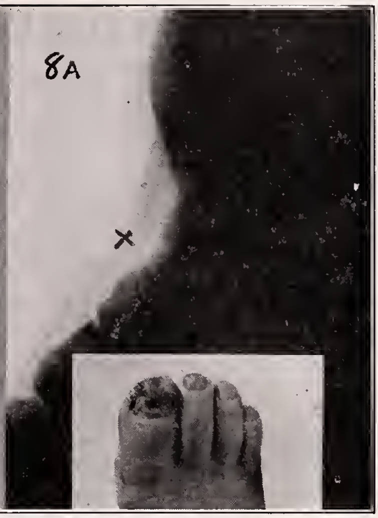


Fig. 8.

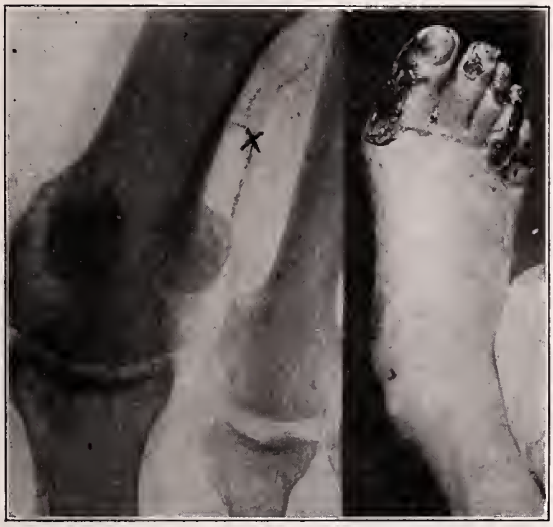


Fig. 9.

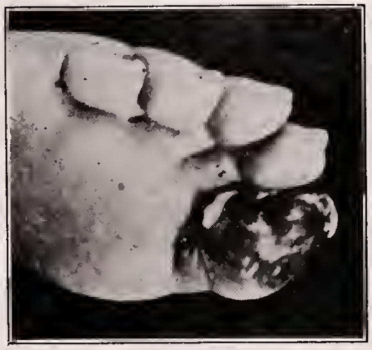


Fig. 10.

ARTERIOSCLEROSIS IN ASSOCIATION WITH DISTURBED GLUCOSE METABOLISM

Permit me to present for your consideration some studies of disturbed glucose metabolism in association with arterial changes.

The management of the diabetic sufferer whose metabolic disturbance is complicated with peripheral tissue necrosis is a problem. A number of years ago x-ray studies of the lower extremities were made on individuals suffering from diabetic gangrene. These radiographs gave considerable information in regard to the consistency of the arterial walls. Where the calcification was sufficiently marked, shadows were cast upon the photographic plate. Simultaneous photographs of the peripheral tissue changes were also made. The photographs of the gangrenous feet are designated by numerals, while the accompanying roentgenograms are marked with the letter "A" (figs. 6, 7, 8, 9, 10), calcified arteries being indicated by X.

All of these cases showed glycosuria of a mild degree. Figure 11 illustrates the records of the glucose tolerance test in three instances, where arteriosclerosis was demonstrable from a roentgenologic standpoint. The last case of this series is the only one upon which autopsy has been possible. Following the autopsy the pancreas was radiographed without preparation with the following result (fig. 12).

Surely a pancreas which must obtain its oxygen through such a sclerosed artery, with such a lumen, must not be able to function as well as one receiving a normal blood supply. If in addition to a hardened narrow artery, there is a viscous blood to pass through that artery, a dual attack is made upon the circulation which tends to break down functional ability and tissue resistance.

Cases of gangrene of the extremities will do well, if found on first examination with a hyperglycemia and an arteriosclerosis. Elimination of the hyperglycemia and the resultant improvement in the circulation will clear up the gangrene. If, however,

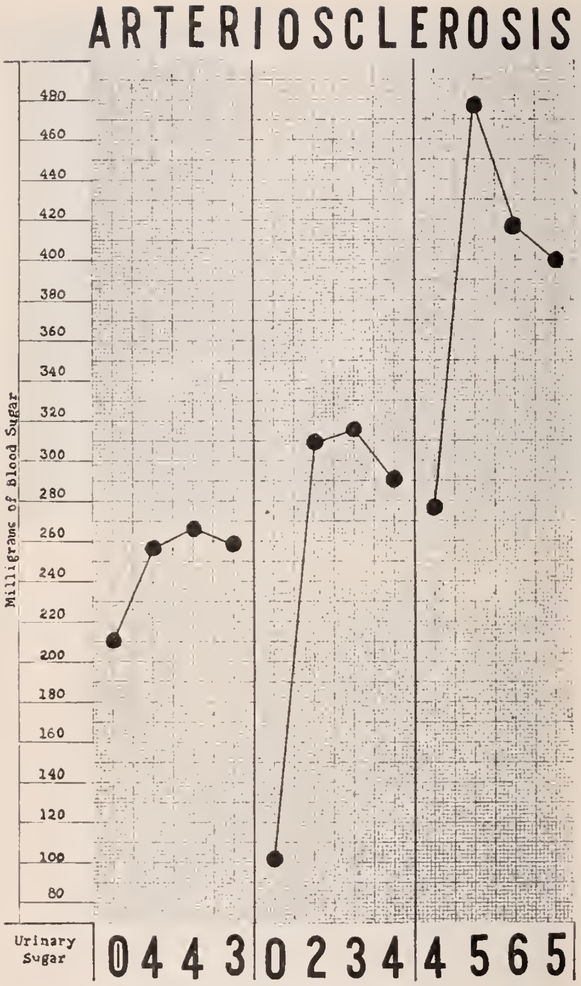


Fig. 11.

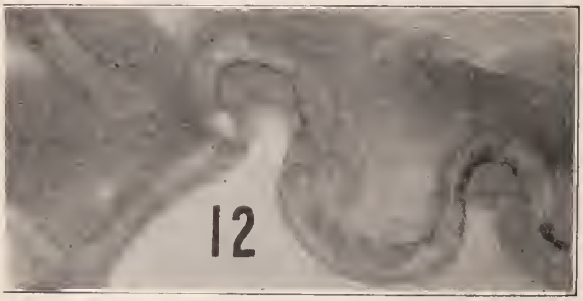


Fig. 12.

a gangrene exists in the presence of an arteriosclerosis without a hyperglycemia, the prognosis is not good, for the arteriosclerosis has probably progressed to such a degree that it alone is preventing adequate circulation and resultant lowered tissue resistance.

INFLUENCE OF THE NERVOUS SYSTEM ON METABOLIC ACTIVITY

The next group of observations are associated with the influence of the nervous system upon metabolic functions. It has been a custom in handling patients suffering from diabetes mellitus to make continuous daily observations on the fluctuations of the quantity of sugar in the twenty-four hour urine specimen. These observations have extended over many months in some instances, and in others for as long as two years time. This method when recorded graphically permits the careful observance of fluctuations on any continuous routine, or the influence of changes in one's basis of management.

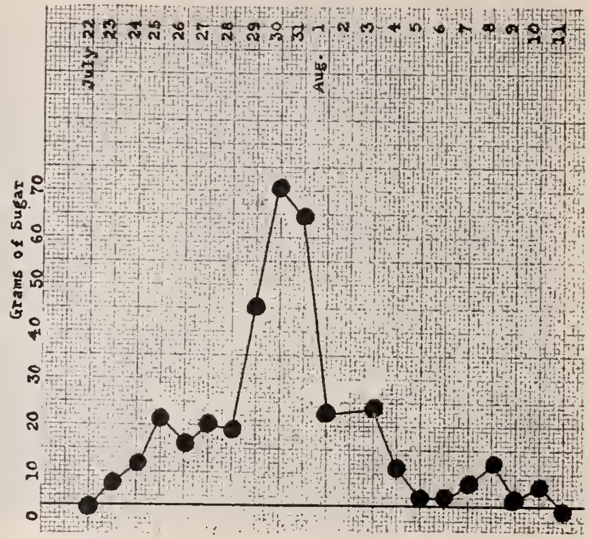


Fig. 13.

The first observation illustrates the fluctuations which occurred during the consideration of an important change of employment.

Mr. H. had been under dietetic and insulin therapy for five months. He had made a good response to treatment, with a marked gain in weight and strength. About the middle of July, 1923, he asked advice concerning the possibility of his attempting a much more responsible position. He was advised to make the effort. The fluctuations in the glycosuria during the time of his mental stress are illustrated graphically. He made his change on August 1, 1923 (fig. 13).

There are four additional observations which give some information concerning the influence of the nervous system upon metabolism.

One little girl nine years of age was being observed carefully by fractionating the twenty-four hour urine specimen into three parts. One afternoon while walking in the park a dog jumped upon the child in a playful manner. She disliked dogs and became frightened. The urine specimen gathered during these hours changed from a normal specimen to one showing four plus acetone and four plus sugar.

The same child, prior to the Christmas season of 1925, received one afternoon a large, life-sized, attractive doll. The elation over this gift was great, and her excitement ran high. During these afternoon hours the acetone and sugar readings in the urine changed to four plus, while they were practically normal in the morning specimens.

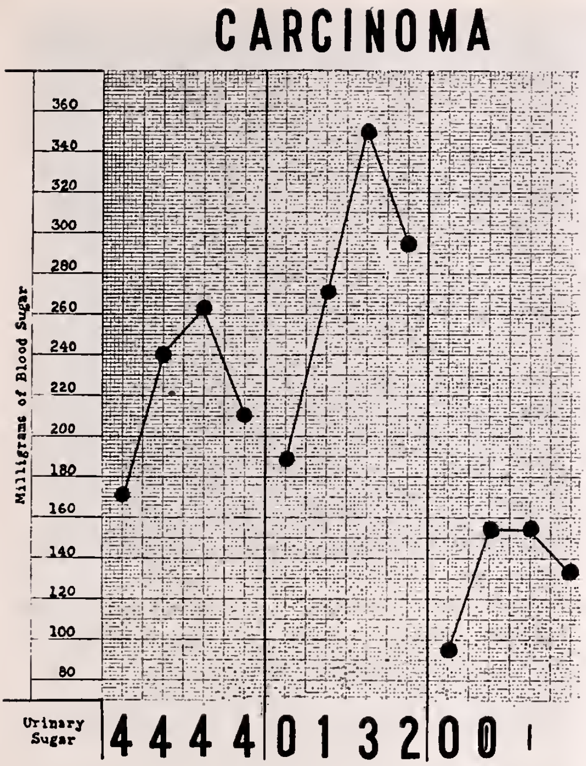


Fig. 14.

Another observation comes from a hospital ward for diabetic boys.

Here, three boys from twelve to fifteen years of age are being observed for one year to determine the influence of accurate, scientific management on diabetes in children. These boys were sugar and acetone free. A gentleman stepped into the ward and gave the boys a ten dollar bill as a fund for incidental pleasures. The joy over this gift was exceedingly great. The boys, who were not accustomed to such gifts, changed the bill into small coins, formed a bank, and had considerable excitement and pleasure in their miniature banking institution. The following day all the boys showed acetone in the urine. This probably was due to temporary increased activity and consequently temporary starvation, but the underlying factor was nervous excitement.

The remaining two observations deal with the appearance of acetone and sugar in individuals on fixed routines, who met with disagreeable situations of domestic importance. The evidence in these last two instances is not as close as the former three, but it would appear that they fit into this group of observations on the ability of the nervous system to influence metabolic activity.

To get direct information in this phase of metabolism is exceedingly difficult. Yet, from the history of the onset of demonstrable symptomatology in many cases of disturbed metabolism, it seems probable that severe nervous strain may have something to do with breaking down an already poorly acting metabolic mechanism to a place where demonstrable disturbance exists.

THE ASSOCIATION OF CARCINOMA AND DISTURBED GLUCOSE METABOLISM

In three instances there has been definite carcinoma in association with disturbed glucose metabolism.

In one instance the site was the right ala nasi, with complete erosion. In another instance an inoperable carcinoma of the stomach, extending from two inches above the pylorus to the esophagus. Still another with carcinoma of the stomach and metastasis to the liver (fig. 14).

THE INFLUENCE OF ACUTE INFECTIONS UPON GLUCOSE METABOLISM

Cousins (*U. S. Veterans' Bureau Medical Bulletin,* August, 1925) reports a case of apparent cure of diabetes mellitus following removal of a focus of infection. The focus in this instance was in the appendix.

In 1923, a certain Mr. R., a patient of Drs. King and Hagyard of Seattle, complained of acute abdominal pain diagnosed as acute appendicitis. Due to heavy sugar and acetone readings in the urine, operation was not deemed advisable. Insulin was just coming into use, and with dietetic and insulin therapy, the acidosis and glycosuria were eliminated. The surgeons operated and drained the appendix of approximately 400 cubic centimeters of pus. The patient recovered, and was able to return to a normal existence without insulin, and only poor attention to diet. Seventeen months later he again came under observation for a second operation. At this time the disturbance in glucose metabolism still existed, although it had, as far as the individual was concerned, caused him no trouble in the interim.

The severe infection in the first instance made more prominent the metabolic disturbance which was present. When the burden of the infection was removed, the metabolic disturbance righted itself sufficiently to give the individual a sugar tolerance high enough to enable him to continue apparently undisturbed. The stress of the second operation temporarily called into prominence this disturbed glucose metabolism which is now again apparently dormant. If you look at this problem from the laboratory rather than the clinical standpoint, a different conception is obtained.

Permit me to submit to you a close observation of the influence of acute infection on glucose metabolism.

This observation is on a twelve year old boy under fixed hospital care of the most accurate type. Daily twenty-four hour urine specimens are being maintained and an accurate dietetic schedule is being enforced. The routine had been constant with regard to food intake and insulin dosage, and the urine specimens had been negative. On May 17, the child developed an acute pharyngitis, accompanied by a rise in temperature. No alterations in diet or insulin were made. The urine specimens collected on the day of the temperature rise show how a diet which was previously metabolized was not taken care of when the organism had to struggle against

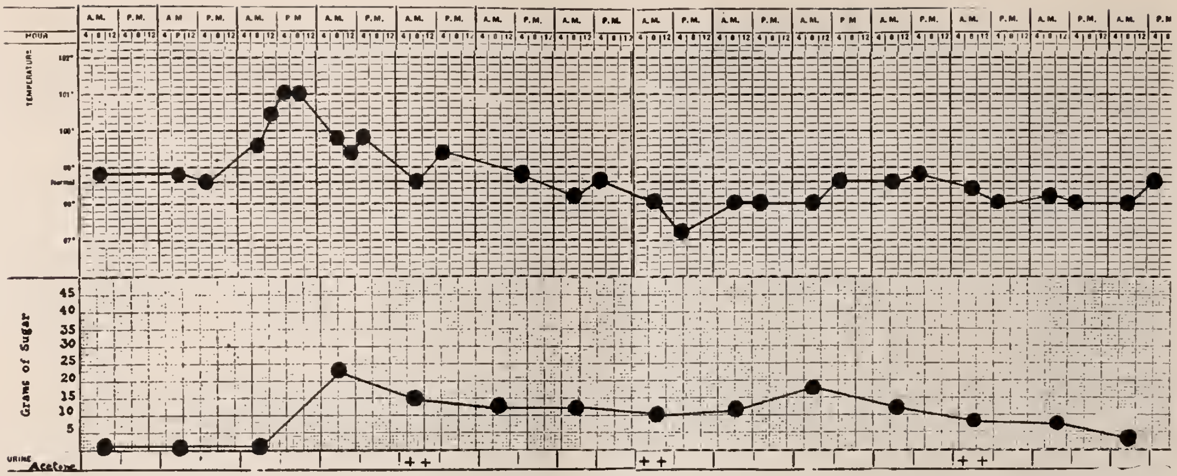
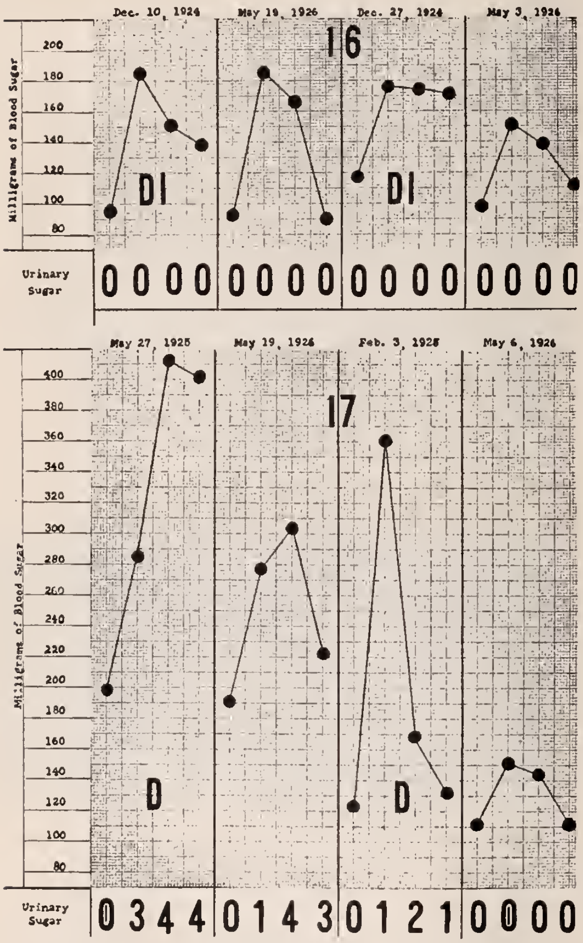


Fig. 15.



Figs. 16 and 17.

the additional burden of the acute infection. The subsequent days may be followed on the graphic chart (fig. 15).

A diabetic individual who is under care with a constant diet, a normal blood and a normal urine, and who develops an acute respiratory infection, will during this infection show higher blood sugar readings and possibly a glycosuria. Joslin has cautioned us in caring for diabetic individuals experiencing such an infection, either slightly to decrease the diet, or if the patient is taking insulin, slightly to increase the dose. Infections do have an influence upon glucose metabolism.

RESPONSE OF TREATMENT AS PORTRAYED THROUGH THE TEST MEAL

The crucial test of any treatment for any disease is whether or not the given treatment will eradicate the disease. Great hope has been held both by the medical profession and the laity that the discovery and application of insulin as suggested by Banting and MacLeod might develop into specific means of eradicating the disease. The accepted means of operation at the present time seems to be through a restoration of the islands of Langerhans.

If one uses as a test of pancreatic activity the ability of the organism to metabolize glucose, some information may be obtained as to what progress our therapeutic measures are making for us.

Four observations are submitted, demonstrating what may be accomplished toward improvement in the ability to metabolize glucose. The observations marked (D1) are the results of combined diet and insulin therapy. Those marked (D) are the results of diet alone (figs. 16 and 17).

DISTURBANCE IN GLUCOSE METABOLISM IN CHILDREN WITH ABNORMAL CHEST FINDINGS

A number of years ago a small child, who had had tuberculosis of the hip with resultant ankylosis and shortening, came with diabetes for treatment. After a good application and response to treatment, the child decided through the influence of her uncle to follow christian science. The obvious result of acidosis, coma and death followed within one week. Permission for autopsy was granted. Extensive mediastinal glandular enlargement of a

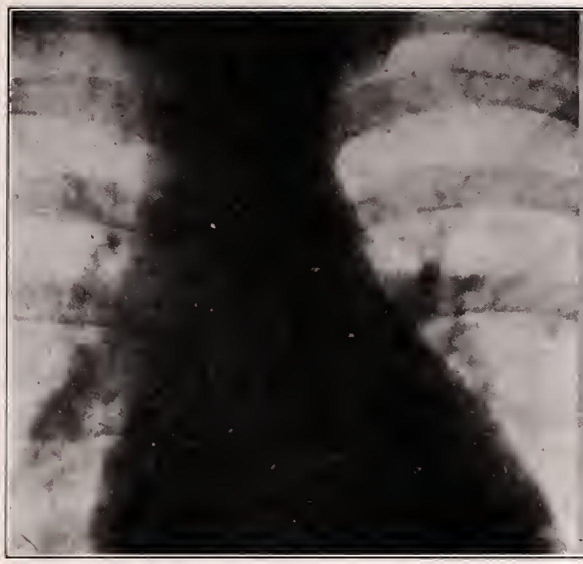


Fig. 18.

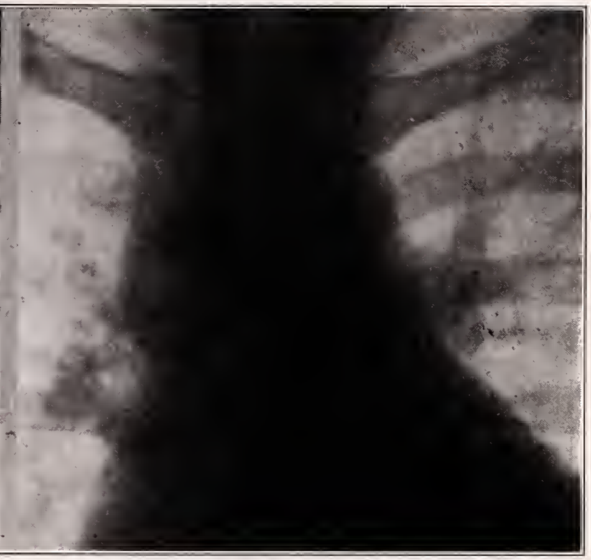


Fig. 19.

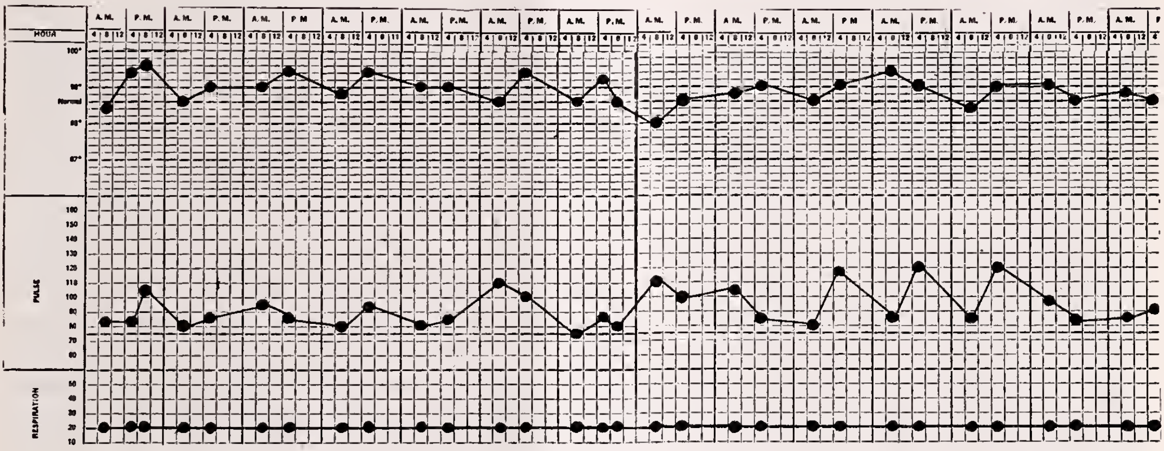


Fig. 21.

caseous nature was diagnosed as tuberculous. With this basis as a lead, all the thoracies of diabetic children available for study were observed for possible findings of glandular enlargement of tuberculous origin.

The results of the x-ray findings are submitted for your consideration. If one accepts the extension of the bronchial workings to the periphery and into the apex as evidence of tuberculous infiltration, there is evidence of pathology in all of the roentgenograms. There is definite increase in the hilus shadows, and the peripheral bronchioles can be observed to extend into the periphery (figs. 18, 19).

The sugar tolerance records of three of these boys are here presented (fig. 20).

The temperature record of one boy is presented (fig. 21).

It is too early to say definitely what is the etiologic factor in this group of cases. However, the hand of suspicion, from the evidence available, points so strongly to a low grade tuberculous infection in the mediastinal lymphatics that it seems to warrant further investigation.

If the disturbing factor in the altered metabolism of children is a glandular tuberculosis, and if the elimination of infections can change an abnormal glucose metabolism to a normal, then the prognosis of children afflicted with diabetes mellitus may have a brighter aspect than our past experiences have warranted us in holding. With a healing of the low grade tuberculous infection there should come an improvement in the metabolism.

There are under observation at the present time three boys. They are receiving every care and attention. A subsequent report will be submitted after one year's observation, giving the details of accomplishment during this period.

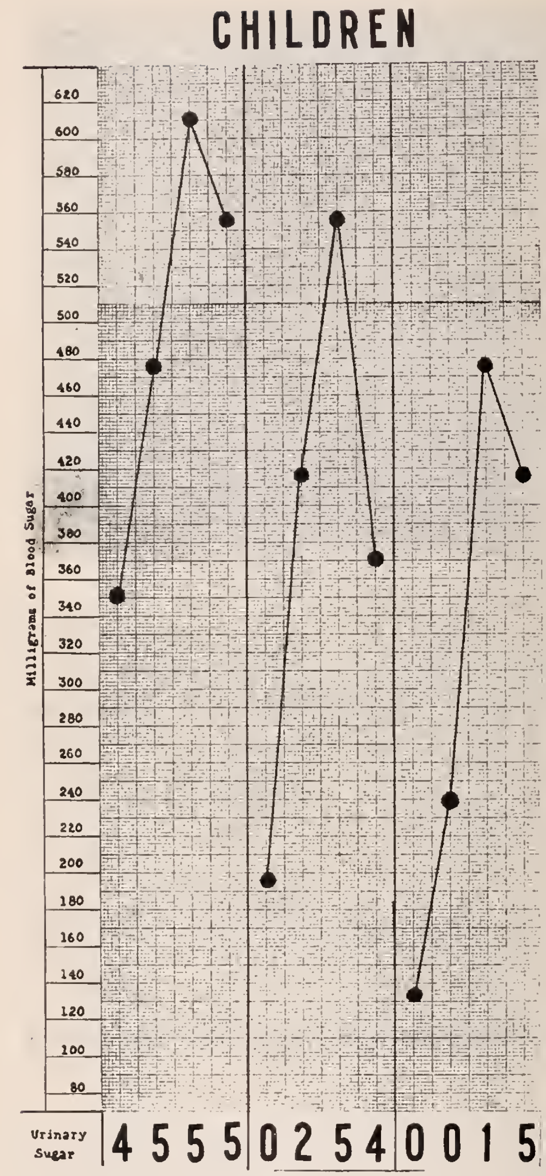


Fig. 20.

CONCLUSIONS

The observations in disturbed glucose metabolism submitted in this report lead the author to feel, first, that these disturbances are not permanently fixed changes, but constantly fluctuating abnormalities which may progress or improve, being rapidly influenced by acute infections, nervous reaction or pathologic changes; second, that the etiology of disturbed glucose metabolism may be shared with that of (1) arteriosclerosis, (2) arthritis, (3) carcinoma, (4) acute and chronic infections, and (5) tuberculosis; third, that the ability of the organism to metabolize glucose may be improved, either with a routine embodying diet alone or by a combination of diet and insulin.

CHRONIC URETERITIS*

H. Welland Howard, M.D.
AND
Marion LeCocq, M.D.
PORTLAND, ORE.

Since 1910 Dr. Guy Hunner has been calling the attention of the profession to this subject. He has written numerous and detailed articles covering all phases in a most convincing manner, but he has omitted the anatomic foundation which autopsy should disclose. In his large experience as a gynecologist he had met a number of cases which remained unrelieved by the best intended and applied abdominal operations. So many of these cases had complaint of some dysuria and of loin pain, so commonly related to lesions of the kidney, that he was led to investigate the urinary tract as a whole, in the hope of finding an explanation.

It was a common practice then to use a wax bulb upon a ureteral catheter for the purpose of detecting a stone by the scratch marks thereon. He noticed that these bulbs would frequently engage as if in a stricture in the same manner that a like bulb would engage in one in the urethra. He observed, too, that such events would frequently result in improvement in the symptoms, as in fact the mere passage of a bare catheter. The latter experience every urologist has had. Finally he became fully convinced that stricture of the ureter does exist in this manner, has definite clinical history and is amenable to a definite treatment. Others, as Tovey, Sanger, Cherry, Hinman, Green, Rathbaun and Stewart, have expressed concurrent opinions. Many have dissented and many are not convinced.

With a view to establishing the matter of stricture of the ureter on pathologic grounds we have had, through the courtesy of the Department of Pathology of the Medical Department of the University of Oregon, the privilege of examining the ureters, kidneys and bladders, intact, of fifty autopsies. The evidence of chronic inflammation in a tubular organ must necessarily be that of more or less of narrowing or stricturing, or conversely stricturing is prima facie evidence of chronic inflammation, past or existent.

Three methods of examining the ureters for evidence of chronic inflammation were employed. In the first group the ureters were simply laid open longitudinally with scissors and inspected carefully for evidence of bands, narrowing, etc. Little was

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* Read before Portland City and County Medical Society, Portland, Ore., March, 1926.

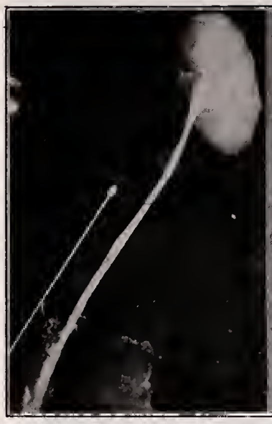

Fig. 1.

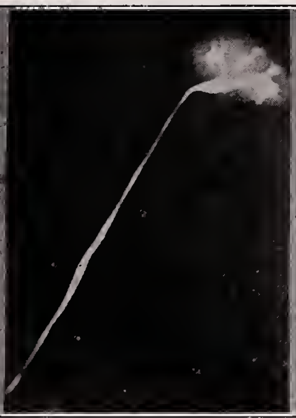

Fig. 2.

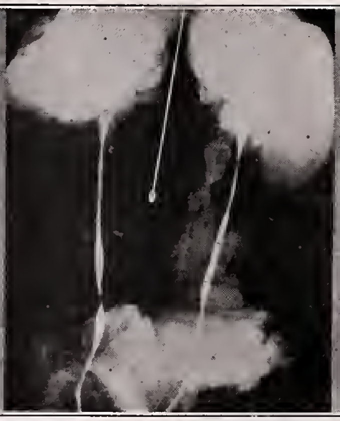

Fig. 3.

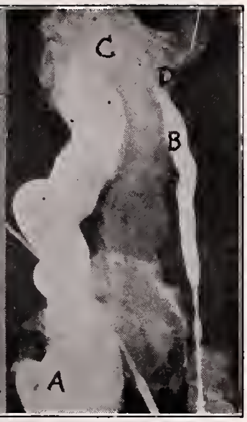

Fig. 4.

Fig. 1. Autopsy specimen, showing normal contour, being free of points of relative resistance to the bougie.

Fig. 2. Shows uneven contour from contracture of chronic fibrosis.

Fig. 3. Shows area of contracture from scar.

Fig. 4. Shows (A) enormous dilatation of ureter with complete atrophy of kidney, due to stricture of ureter in bladder wall. Shows (B) like process in the opposite ureter but of less degree. Seminal vesicles (C) injected. Vas deferens (D) injected.

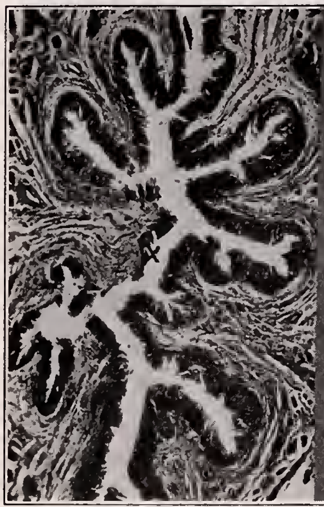

Fig. 5.

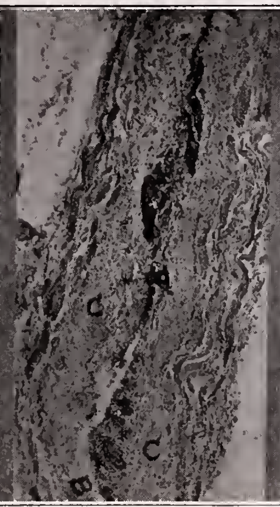

Fig. 6.

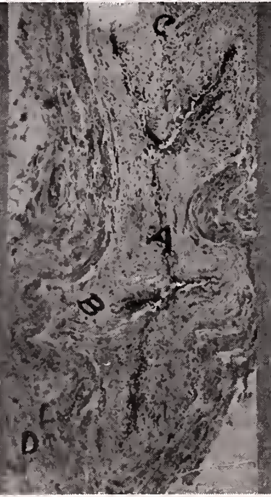

Fig. 7.

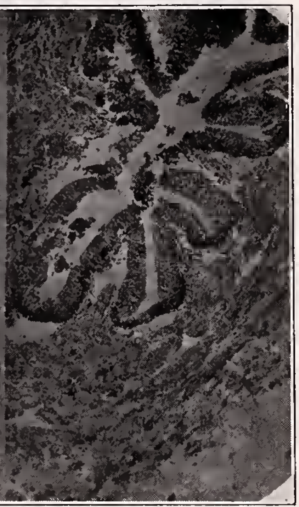

Fig. 8.

Fig. 5. Cross section of normal ureter.

Fig. 6. Section of ureter, showing (A) loss of epithelium, (B) replacement of longitudinal bundles of fibrous tissue, (C) submucous fibrosis.

Fig. 7. Section of ureter, showing ureteritis: (A) loss of epithelium, (B) fibrosis of submucosa, (C) absence of longitudinal muscle bundles, (D) hyalinization of circular muscle bundles.

Fig. 8. Section of ureter, showing early stage of fibrosis by the presence of spindle cells throughout the submucosa and muscular layers.

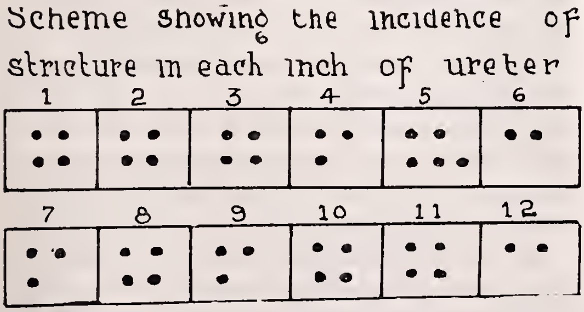

Fig. 9. Shows incidence of stricture by dots in each inch of ureter from bladder to kidney.

accomplished in this way, as all of the ten specimens appeared normal or nearly so.

It was then recalled that the method of detection usually employed clinically in locating narrow areas in urethras and ureters is by means of the olivary bougie. Twenty-eight specimens were then examined in this way, using olives in sizes from 8 to 20 F., each equipped with a long staff. By this method only three of the twenty-eight were found to be free of stricture bands and were characterized as follows: no obstruction was detected by any and all of the olives; the texture of each of these three ureters was so uniform from one end to the other as to declare that no change had occurred at any point of a scarring nature. The remaining specimens had bands of varying sizes, arranged

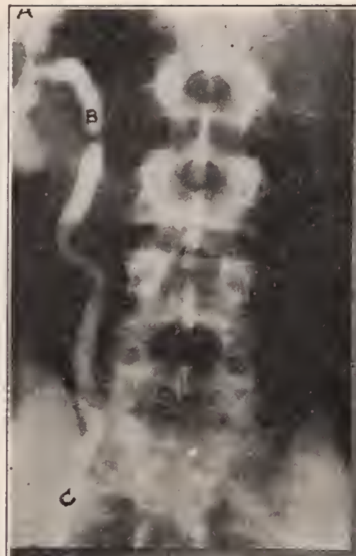

FIG.10

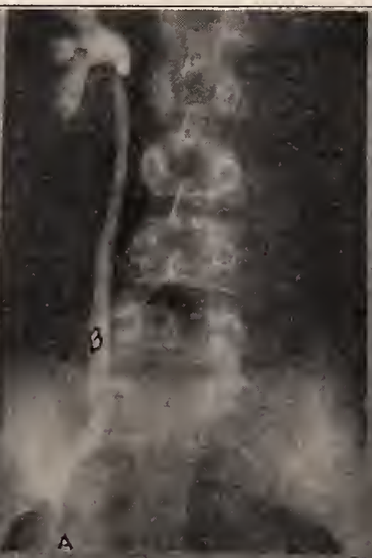

FIG.11

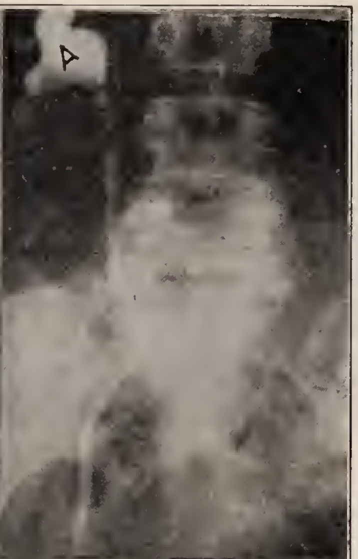

FIG.12

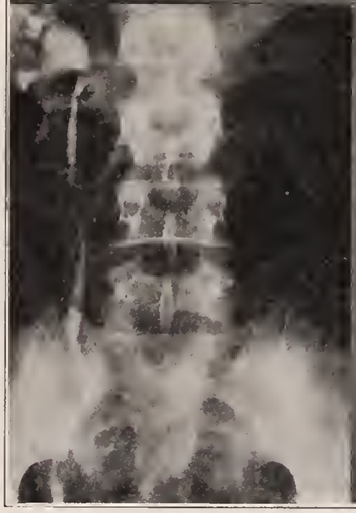

Fig. 13.

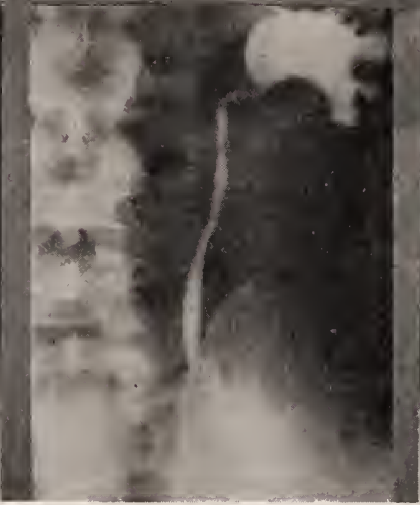

Fig. 14.

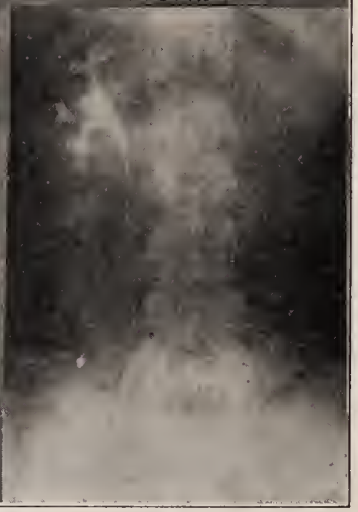

Fig. 15.

Fig. 10. A, filling defect and pyonephrosis. B, stricture. C, dilatation from stricture at bladder wall.

Fig. 11. A, stricture. B, dilatation above.

Fig. 12. Pyelectasis from stricture in upper ureter.

Fig. 13. Chronic deforming ureteritis throughout. Stricture at bladder wall and near kidney.

Fig. 14. Chronic deforming ureteritis throughout with strictures near kidney.

Fig. 15. Shows segment of chronic ureteritis with narrowing throughout upper half of ureter.

singly and sometimes in groups, preponderately in the upper and lower thirds.

The ureter in the adult is approximately twelve inches long. When examining the specimens, they with the kidneys and bladder were placed upon a board marked with an inch scale. The points at which the strictures were found were recorded in terms of inches from the bladder. Approximately twenty of these narrow areas were excised for microscopic studies, the results of which are shown in the following slides. Some of the specimens were unfit for study because of technical error in embedding, cutting, etc.

All of the excised specimens presented more or less of the following characteristics: (1) Replacement of the muscular fibres with fimrous tissue, (2) general hyalinization, (3) vascular-wall thickening, and (4) loss of mucous membrane.

The third method of study employed was that of ureteropyelography, using 15 per cent sodium iodide solution under a pressure of 10 mm. of mercury. This method was probably the best, as it more nearly paralleled clinical practice. Approximately twenty specimens were examined in this way.

On anatomicopathologic grounds we think it is demonstrable that chronic ureteritis is extremely common, but obviously is much less often of clinical moment. The discrepancy is not so surprising when we recall that eminent pathologists have expressed the opinion that evidence of chronic inflammation can always be found in the appendix, though it had caused no disturbance.

Clinically the evidence of chronic ureteritis consists of signs and symptoms. The signs are adduced by (1) exploring instruments, as olives, wax or metal, and ureteral catheters. Obstruction or excessive tightness is discovered by these means. (2) By pyeloureterograms, in which filling is adequate to bring out full details.

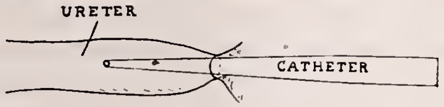

FIG.16

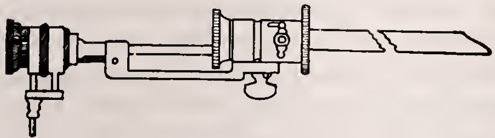

Fig. 17.

Fig. 16. Shows occlusion of ureteral ostium with tapered catheter.

Fig. 17. McCarthy's panendoscope for introducing large tapered catheter.

In making the ureterograms of the autopsy specimens we noted that two conditions were necessary to obtain proper detail. (1) The canula must be fastened in the ureter so as to prevent escape of fluid, and (2) the intraureteral pressure should be adequate to obtain full dilatation but without stretching. These conditions are obviously incorporated in the ideal pyeloureterogram, where one uses a tapered catheter, sized to fit tightly the ureteral ostium, and where the dilating is obtained by measured gravity pressure. We use a Garceau catheter of suitable size, introduced through McCarthy's pan-endoscope. The pressure should be about 20 mm. Hg., 10 mm. to overcome intraabdominal pressure and 10 mm. to distend the ureter.

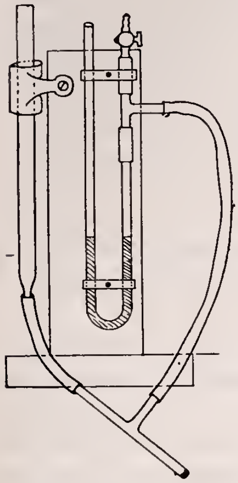

Fig. 18.

Fig. 18. Manometer for control of pressure in the ureter.

The symptoms of chronic ureteritis fall into two groups of local and referred pains.

The local pain is dull and accompanied by tenderness. It corresponds to the level and extent of the lesions. Usually there is no abdominal rigidity.

The referred group of pain occurs only when there is some degree of obstruction, and is located in the loin or over the kidney. Reflex disturbances in the gastrointestinal tract are common, such as anorexia, nausea, vomiting and meteorism. Fever is present if infection accompanies.

Etiology. It is quite certain that the usual portals of infection, viz. the teeth, tonsils, sinuses, etc., play an important role. Acute infectious diseases probably do also, the infection in each instance being blood-born. Another source of infection is probably in the internal genital group, the pathway being the lymphatics. Trauma about the kidney appears to be an important factor in causing infection of the upper third of the ureter, where it is less protected.

Prognosis. Response to treatment is prompt, complete and lasting.

Treatment. (1) Foci of infection should receive appropriate treatment.

(2) Dilatation in chronic cases is the most effective agent. Local application of solution of silver nitrate in subacute cases is very useful. Dilatation is best carried out by means of bougies in ascending sizes. In approaching the lower end of the ureter through the bladder it is some times very useful to do a preliminary meatotomy of the ureteral ostium. We think it is impossible to dilate strictures of the upper third via the bladder. It must be done through a pyelotomy after the kidney has been exposed.

Dilatation measures are not useful in acute or subacute stages of ureteritis or the type in which there is an absence of deformity, the diagnosis resting upon clinical grounds. Silver nitrate is here most effective.

STONE IN THE URETER*

AN APPRECIATION OF THE W. A. COUNCILL EXTRACTOR AND DILATOR

John Besson, M.D.
BEND, ORE.

Eleven years ago I read a paper on the cystoscope before this society and among other things described the symptoms of ureteral colic. I told you that a catheter passed into the ureter might meet an obstruction or not, but that the next day the patient would be likely to return to you with the stone in his hand. The stone would be as large or twice as large as a grain of wheat.

Since 1915 much has been added to cystoscopic technic and measures for dislodging ureteral stones besides open operation. An injection of olive oil through the ureteral catheter has been thought to be a step better than merely poking at the stone.

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* Read before the Fiftieth Annual Meeting of Oregon State Homeopathic Medical Society, Portland, Ore., Oct. 13, 1926.

Then along came dilating bougies to be used through the operating cystoscope. Tiny scissors on a flexible shaft to meatotomize the ureteral mouth for the release of the stone impacted just at the opening proved successful, and because of the objection that stricture sometimes follows this incision, it is suggested that the meatus be enlarged with a diathermy electrode.

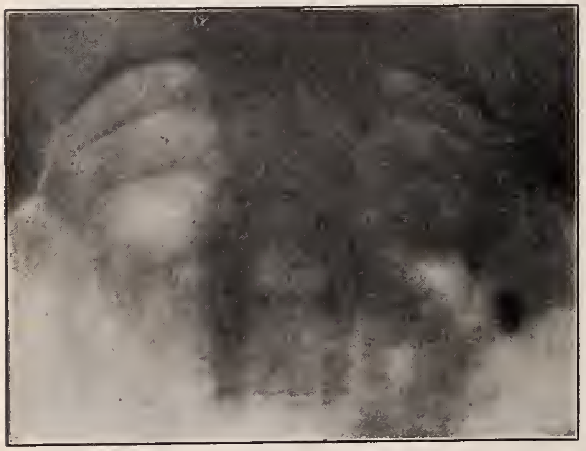

Fig. 1.

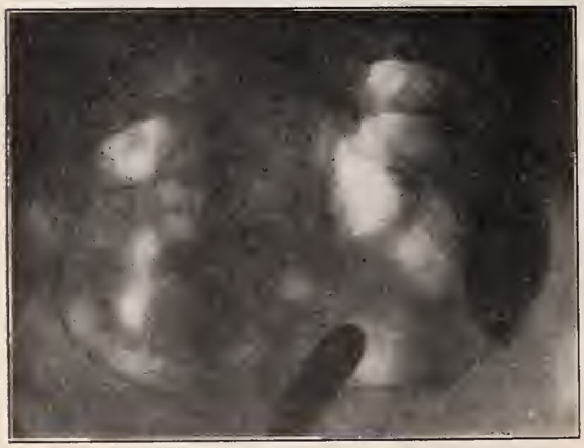

Fig. 2.

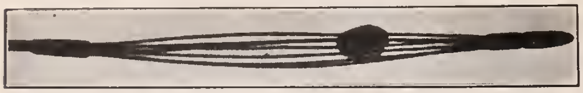

Fig. 3. Stone 0.35 gram, 5x9 mm. In grasp of Councill extractor.

A distinct addition to the foregoing is the use of the indwelling ureteral catheter.[1] Just as a few filliform bougies, passed through a tightly strictured urethra with complete retention and allowed to remain, seem to bring about relaxation and allow the urine to dribble out, so the catheter left in the ureter for a day or two probably brings about the passage of stones larger than those passed after mere dilatation, etc.

Undoubtedly the successful issue of cystoscopic ureteral manipulation requires more than sufficient calibre of the ureter opening and gravity. Besides the hydrostatic pressure of the urine behind the stone, the muscular action and tone of the ureteral walls are the most potent factors in the propulsion onward.

If such a stone as shown in the radiograph (fig. 1) of case H. M. were in a normal ureter, it could probably be coaxed down to the ureteral meatus, where it would become impacted. As shown in figure 2, where the ureter is injected with sodium iodide, however, the lower two inches of the left ureter is dilated to the size of a little finger and olive bougies almost as large in the bulge as the stone slipped by easily, and as easily returned without making any traction on the stone.

H. M., stationary engineer, 37 years old, passed two small stones six years ago. X-ray in Nov., 1924, identical with plate No. 1. Operated on Dec., 1924, by surgeons who opened his bladder and also the left kidney pelvis. The surgeons, having no stone to show, however, assured the man's wife that there would be no more attacks as they had "crushed the stone against the pelvis bone."

After reaching home the attacks of colic resumed and the urine became of foul odor and cloudy. The surgeons then recommended removal of the left kidney.

In the year past I have tried olive oil injections, indwelling catheters, dilating bougies, etc., without success other than to keep the man at work, the ureter and pelvis antiseptic instillations somewhat controlling the infection and greatly ameliorating the attacks of colic.

The contrivance of Illievitz[2] was tried, a thin rubber tied over the end of the catheter and inflated by syringe after entering the ureter. I feel it impractical for a fair-sized stone.

The extractor as reported by W. A. Councill[3] is an instrument of precision perfectly adapted for a stone at large in such a dilated pocket as shown in this ureterogram (fig. 3).

The principle of the well known esophageal probang with the horse hair mesh near the tip is suggestive of Councill's extractor. The wires of the mesh spread out as the finger holes and thumb hole of the movable handle are approximated. The mesh can be spread to fill the ureter at the location of the stone, encompassing the latter and fastening it in their tightening grasp.

The traction necessary for the delivery of this stone of H.M., which weighed 0.35 gm. and measured about a centimeter in length, called for the inhalation of a few drops of chloroform.

There is no other measure to be compared with this extractor for this type of case and that this patient has been saved another open operation with its attendant possibilities is a tribute worth recording to Councill's inventive ingenuity.

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1. Beer and Hahn: J. A. M. A., April 4, 1925.

2. S. G. and O., April, 1925.

3. J. A. M. A., June 19, 1926.

POLLAKIURIA*

FREQUENCY OF URINATION

W. G. Schulte, M.D.
SALT LAKE CITY, UTAH

Normally the frequency of urination varies greatly with habit, heredity, social convenience, age and sex. Children void more frequently than adults, and men more frequently than women. Voiding is more frequent by day than by night. Kelly says that more than seven micturitions in the twenty-four hours should be considered abnormal in an adult.

Pollakiuria must be distinguished from polyuria. The normal act of urination depends upon centripetal impulses or stimuli, and centrifugal impulses of a positive rather than a negative nature. The detrusor muscle contracts, but urine does not leave the bladder till the trigonal muscles open up the bladder orifice by their traction upon the uvula vesicæ. The impulse to urinate originates within the bladder and depends upon the intravesical pressure and the degree of vesical irritability. Therefore, with increased irritability less intravesical pressure is needed to produce the urinary impulse. We must distinguish between increased irritability and lessened bladder capacity. At times these two conditions are coexistent.

Frequency of urination may result from disturbances outside of the urinary tract. Hemmorhoids are often responsible for a frequent desire to empty the bladder. We find it at times with appendicitis, even though the appendix does not lie within the pelvis. The pressure of a pregnant uterus may decrease the bladder capacity and result in frequent voiding. Perineal lacerations with cystocele are often the cause. Any pelvic tumor may by encroachment upon the bladder lessen its capacity to retain urine.

Hysterical frequency needs no comment. Exophthalmic goiter may have pollakiuria as a prominent symptom. Lesions of the hypophysis cerebri and the pancreas are accompanied by frequent urination but this is due to polyuria and easily distinguished by the large amounts passed at each voiding. An abnormal fluid intake or the ingestion of alcohol or drugs may produce the same result.

In lesions of the kidney we must first consider nephritis. When of the interstitial variety, there is more urine voided than normally, but the character of the urine and the history of the case will help us to make a diagnosis. The other nephritides need not concern us here unless the inflammatory process involves the kidney pelvis, and then we have a pyelonephritis which is perhaps the most common cause of urinary dsiturbance, especially in the female. It may produce a very marked frequency even though the bladder is apparently quite normal in appearance. The organisms responsible are usually, first, a coccal infection and then a baccillary invasion. We often find only the colon bacillus or one of its group.

It is of extreme importance that the tubercle bacillus be not overlooked. In every urinary examination, when there is a history of bladder irritability, we must exclude tuberculosis. This may be very difficult.

Next to malignant disease, tuberculosis is the most serious disease of the kidney we are called upon to treat. Its extension is so rapid and its results so crippling when unrecognized that we must ever be on the alert to find it. Its early lesions produce but little disturbance of function except urinary frequency. This is present in 90 per cent of the cases, according to Kelly. When such a catheterized specimen is negative on culture, and contains only a few pus cells, a diagnosis of tuberculosis is very probably the correct one. Repeated examination and animal inoculation will disclose the bacillus. It appears in showers at times, and may be absent on several examinations. It may appear at any age but is most frequently encountered in young adults. The process may involve but a small portion of the kidney, and yet the symptoms may be very marked with the bladder apparently normal.

Pyelitis is very common in infants and children. Frequent voiding is an early and important symptom, and may be the only one complained of. It is found in adults of any age, and may persist almost indefinitely. It may be recurrent and ultimately responsible for severe damage to the kidney. Focal infection is a common cause. Constipation when present tends to induce chronicity. The colon group is usually found on culture of the urine. Other organisms, gonococcus, etc., may infect the kidney, but the urinary picture is much the same. Tumors of the kidney may cause urinary frequency, even in the absence of infection. Young states it was present in 16.2 per cent of forty-three cases studied at Brady institute. Hydro- and pyonephrosis are at times accompanied by frequency, even though the diseased kidney be completely blocked. Nyphrolithiasis not infrequently causes pollakiuria as well as pain and hematuria.

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* Read before Pocatello Medical Society, Pocatello, Ida., Jan. 6, 1927.

The ureter responds to infection in much the same way as the kidney. Any irritation of its lumen from within or without is apt to be accompanied by frequent desire to urinate. Very much overlooked are the cases of stricture to which Hunner first called attention in this country. These are the result of ureteritis, either simple, tuberculous or gonorrheal. They are often resistant to treatment. Even in the absence of colic, stones may produce a continuous desire to urinate. This is present night and day.

Cystitis, so-called, or irritable bladder, is probably the diagnosis most frequently made to explain a lesion anywhere in the urinary tract. Acute localized cystitis as a cause of urinary frequency is rare, and when present is of very short duration. Practically all cases of cystitis have their origin higher up or lower down. They are secondary to a pyelitis, a kidney tuberculosis, a gonorrhea, a foreign body, a tumor or an ulcer. Cystitis resulting from catheterization following operation may be very obstinate, and it may become chronic if there is an obstruction at the bladder outlet, or residual urine from other cause. The normal human bladder is not easily infected, providing it empties itself completely.

Interstitial cystitis of Nitze, the elusive ulcer of Hunner, is a deep infection of the bladder wall. It produces extreme frequency, while the urine remains normal, and is sterile on culture, or occasionally gives a growth of streptococci. It is chronic, difficult to overcome by surgical or other measures, and very elusive to observation.

Gonorrheal cystitis and trigonitis are common in young people, and if uncomplicated are of short duration. They produce marked pollakiuria.

Foreign bodies of any kind in the bladder are productive of irritation with frequent voiding. Bladder tumors, benign and malignant, may lessen bladder capacity by their size, or they may irritate by their location or by harboring infection, and be the cause of frequency. Diverticuli often form nests for infection or stone.

The bladder may contract as a result of chronic inflammation or hypertrophy, and have to empty itself frequently because of its small capacity.

Infection of the posterior urethra by the gonococcus is the most common cause of frequency among young men. Gonorrheal urethritis has seemed to me to be on the increase among young women. It may be very intractable, especially if complicated by littritis and strictures. Occasionally we encounter diverticuli and polypi of the posterior urethra. These may prolong a pollakiuria. Stricture is at times complicated by the formation of stones within the dilated urethra. Chronic posterior urethritis follows infection of the prostatic tubules and the seminal vesicles.

The genital tract is responsible for a large percentage of pollakiuria in the male. In the young the prostate is invaded by the gonococcus with resulting posterior urethritis and trigonitis and extreme urinary frequency. Stricture of the urethra has been discussed.

Seminal vesiculitis can cause a most obstinate urinary frequency, and one that is difficult to diagnose. The cause may be a B. coli infection, gonorrhea or tuberculosis. A calculus within the vesicle can produce all the symptoms of posterior urethritis with frequency.

In old men the prostate enlarges and is usually infected with simple organisms. There is increasing difficulty in voiding, and a frequency at first noticed at night and in the morning. The bladder muscles hypertrophy, and its capacity is lessened as the hypertrophy increases. At the same time the trigonal muscles offer more obstruction by forming a median bar. A gradually increasing residual urine is the result. That leaves less and less volume as the difference between the amount of the residual and the total bladder capacity, which is all that is left to the individual as his working bladder capacity. As this decreases, it fills more rapidly because of its small absolute volume, and hence must be emptied with increasing frequency, until the residual equals the total bladder capacity, and there is a continual overflow or the so-called incontinence of retention, paradoxical incontinence.

In tabes the bladder fills to capacity and the centripetal impulse cannot pass through. The result is the same, an overflow. Strictures of the posterior urethra, and contraction of the vesical neck produce a frequency in the same manner.

In women an hypertrophy of the subcervical group tubules of Albarran does occur, and produces a frequency with residual urine, just as in the male. Kretschmer reported one such case, and I have had one in my own practice. Inflammatory conditions of the adnexa, a severe endocervicitis or endometritis are often accompanied by urinary frequency.

This paper is meant to outline in a general way conditions to be investigated when trying to find the cause of urinary frequency or pollakiuria.

CONGENITAL DISLOCATION OF HIP

A CASE THIRTEEN YEARS AFTER OPEN OPERATION

C. F. Eikenbary, M.D.
SEATTLE, WASH.

At the present time there is a considerable amount of discussion regarding the open treatment of congental dislocation of the hip. The following case is reported because of certain interesting features it presents, relative to the open treatment.

H. A., age 23. Was operated on for congenital dislocation of both hips when he was eleven years of age. Each hip was done by the open operation, and in each instance the acetabulum was very markedly enlarged by means of a chisel and a heavy curet. Nothing whatever was done to disturb the articular surface of the head of the femur, which was reduced by means of the ordinary skid. The recovery was uneventful.

I saw this patient recently for the first time in ten years. The radiograph (fig. 1) represents the condition of the hips at the present time, thirteen years after the operation. This boy at the present time is a student in the University and is fairly active in athletic work. He plays an excellent game of tennis, can take very long hikes without any difficulty, and for the ordinary occupation he has no disability whatsoever.

The appearance of the radiograph would indicate there was very marked limitation to motion and that his disability would necessarily be very great, but such is not the case. He can sit in his chair as anyone would sit, without there being any undue exaggeration of the lumbar curve (fig. 2). He stands perfectly well (fig. 3). He walks with a slight stiffness, due to the fact that there is a definite limitation to the abduction of both of the hips. Both hips have a range of motion starting from 180 degrees, that is, a straight line, up to 90 degrees. He has a moderate amount of adduction, very limited abduction. From a radiographic standpoint the result does not look good, but from a standpoint of function it is entirely satisfactory.

This is an operation which I have done in a number of instances in children, ranging in age from seven up to fourteen years. I have yet to see a single case go on to ankylosis. I do not recommend it as being the only operation to consider, and I am not sure in my own mind that it is really the best operation to be considered. Certainly, however, in this particular case the end-result is far better than any I have seen following the so-called shelf operation, that is, the operation after the plan of Dickson, wherein a shelf is turned down from the ilium to form a new support for the head of the femur.

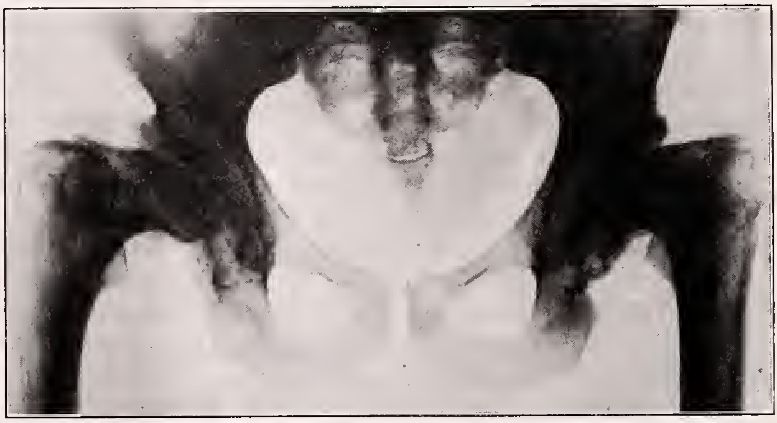

Fig. 1. Radiograph thirteen years after open operation for congenital dislocation of the hip. Marked coxa vera but the function is quite good.

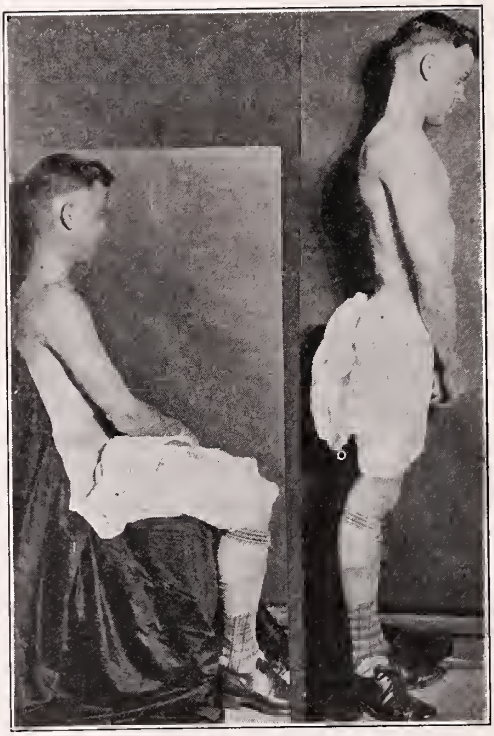

Fig. 2. Fig. 3.

Fig. 2. Position assumed by patient in sitting.
Fig. 3. Position assumed by patient in standing.

ACUTE APPENDICITIS

J. F. Scott, M.D.
YAKIMA, WASH.

The acute appendix is now being operated on by the general practitioner everywhere. This is as it will be and probably as it should be, as these cases stand transportation badly and the time element is usually very important. The mortality is higher than usually thought. Having seen the work done on these cases in many places, I feel sure that the many men operating have taken their technic from the method used by the more prominent men in removing a subacute or chronic appendix, often in the course of a laporotomy for other pathology.

The conditions and procedure are entirely different. In about 90 per cent of acute appendices a definite diagnosis can be made and it is to these cases that the following remarks apply. Here we take it as axiomatic that nothing more is to be done than to remove the appendix and its attendant fecolith, pus or other debris. No exploration of other organs should be considered; the shortest route to the appendix and the least disturbance to the patient will yield the best results. If in doubt of a gallbladder, peptic or other ulcer, pancreas or tubal trouble, of course, an incision to best care for these conditions, if found, should be used. But in the 90 per cent of acute lower, right-sided pain the diagnosis is correct, if aimed at the appendix.

Nothing original is claimed for the procedures here recommended. They have been used for thirty years that I know of. It does not matter how long you work at a chronic appendix. The acute, bad abdomen should be back in bed, usually in twenty minutes. The moribund case should be left operatively alone, but in all conditions short of this, I think, the sooner the cause of the spreading infection is removed the better. If cold or exhausted from travel, wait a few hours until the general shock has quieted down. All preparations should be complete before the patient is taken from bed, a small dose of morphine and atropine given one-half hour before. If the abdomen is distended an enema or rectal tube is introduced and gastric lavage if needed. This is the day of open surgery, but the fewer exposed bowels the better for the patient with acute appendicitis.

Simplicity of procedure is the key note. Keep away from the small bowel; also keep away from walling off with gauze and from elaborate drainage. Depend more on nature. The incision should be arranged over the point of maximum tenderness. Usually this will be between the anterior superior spine of the ilium and McBurney's point. Usually the incision is much farther to the right than the McBurney classical gridiron, and the cavity is entered outside of the cecum. With this exposure a retrograde removal of a post cecal appendix is very simple.

A 1 per cent solution of novocaine is injected under the skin and about 30 c.c. introduced below the external oblique muscle outwards and upwards. This will help relaxation, and will minimize the anesthetic used. As soon as the original wheal in the skin is made the anesthetist starts gas and oxygen, or ethylene. The reason for this is to have the patient asleep when the appendix is raised.

In an ordinary abdomen a two inch incision in the direction of the fibers of the external oblique is long enough. When the internal oblique is exposed, a pair of scissors may be thrust in and opened; then with the forefingers of each hand the incision is extended. Now the transversalis fascia and peritoneum bulge up into the opening. Then make an incision long enough to introduce one forefinger. The right common iliac artery is felt and followed up until the fold of peritoneum forming the mesocecum is found. This is a fixed point and always dependable. The cecum is drawn up and, going over toward the left, the ileum is noted, while to the right the broad longitudinal band follows down to the base of the appendix. This is clamped and, if then you can deliver the appendix easily do so, if not, tie it off, cauterize with phenol and drop the stump, or cover it with the first strip of mesoappendix cut. Then follow down, clamping between the cecum and the appendix. Almost any retrocecal adherent appendix can have all its attachments delivered and cut under direct vision through this incision. If the appendix lies over the brim down in the pelvis, follow gently with the finger, separating as you go, and if necessary, do not hesitate to enlarge your opening over to the left and into the sheath of rectus muscle. The omentum may be adherent to the appendix; it may be a large thin-walled organ full of pus, and utmost gentleness is required in order not to rupture.

The danger of pus is much exaggerated. A well marked immunity has been developed in the peritoneal cavity to the usual colon infection, and it is operative trauma to the bowel that is dangerous rather than the pus. If the pus is gently removed with moist gauze, usually no after effects are noted, unless meddlesome surgery has added to the load. If your original opening goes into an abscess cavity, and you feel that you should quit, by all means do so and get the appendix later. Here the individual ability of the operator must be decided by himself. Practically all of these cases are operated on without the use of lap pads to wall off. A long incision demands walling off, as usually there is gas and a full abdomen causing the rolling out of much of the small intestine, and this handling is very hard on this type of patient.

After the removal of the appendix the question of drainage comes up. (a) A simple enlarged vascular appendix is closed tightly. (b) If some grayish lymph is present, a rubber dam strip is placed in the muscles after closing the peritoneum. (c) If the appendix is gangrenous, one rubber strip is placed near the stump and left there till the next day. (d) If free pus is found, two strips of rubber dam are introduced, one to the appendix base, the other to Douglas's cul-de-sac, always against the parietal peritoneum on one side. Under no circumstances are drains inserted into the center of intestinal coils to cause adhesions, and here they do not drain. Neither is the cigarette drain ever used. A large split tube is placed in a large abscess cavity, and the soft rubber dam in all other cases, which are removed in from one to four days.

As to closing, in most of these cases the peritoneum is loose enough to tie as a purse string, thus leaving a very smooth interior. This extreme right-sided incision has a much more free peritoneum than the rectus incision, and time is saved in closing. The anesthetic is stopped before closing starts, as the novocaine will be sufficient. If pus has been found, no catgut is used in the wall. Silk-worm gut, figure eight, is loosely tied, with moist boric dressing applied.

One advantage of the far-out incision is that in postoperative obstruction cases, in which enterostomy is required, one can place a new incision entirely away from the drainage of the first opening. One case had two postoperative enterostomies done the first week, and recovered nicely. These always get by with local anesthesia, simply putting a catheter into the distended loop and swinging omentum about it. A quart of 5 per cent glucose by rectum on the table helps, and tap water with soda bicarbonate proctoclysis is started very slowly at once with enough morphine to hold pain. Eserin, 1/60 grain every twelve hours for four doses, does no harm, and may help to keep the belly flat and the patient comfortable.

The Rehfuss nasal duodenal tube is introduced shortly after operation and left in from one to four days. The patient is encouraged to drink all the water he will with soda bicarbonate added. Most of this returns at once through the tube, carrying off gas and stomach detritis, while some water is absorbed. The abdomen flattens down, the patient breathes better. It is an absolute safeguard against acute dilatation of the stomach, and since its use intestinal obstruction has not occurred. It is a simple life-saving procedure, and I think fully takes the place of gastrostomy as advocated by Witzel. A regular duodenal bucket may be used or Dakin tubing with a few lateral openings answers as well. The nostril is cocainized, the tube lubricated and passed well into the stomach. Then with a syringe fill the tube and establish a syphon action. The tube should be at least six feet long and the end rests in a vessel on the floor by the bedside. Adhesive tape on the face holds it in place and adhesive holds the tube on the bed so that the weight will not drag on the nostril. Occasional clearing of the tube with the syringe may be needed. These patients are usually thirsty and the promise of water will make them tolerant of the discomfort of the nasal tube.

The statement of Yates that postural methods are futile, so far as drainage is concerned, is probably correct. The raising of the head of the bed about twelve inches has to do with comfort and easier breathing and is routine. Gardiner's observations are fully concurred in, that limited drainage diminishes time used in operating and thus shock. The aftertreatment is less painful, fecal fistula and intestinal obstruction lessened. The massive drainage that Morris observed would kill any healthy policeman, and give the possessor of an infected abdomen little chance, has been handed down to us as large rubber and glass tubes with an idea that they were permanently draining, but Moynihan has shown that true drainage stops in twelve hours and after this the fluid on the dressings is an irritative exudation from the peritoneum. With distended small intestine a small high enterostomy or a catheter introduced into the stump of the appendix seems logical. I have regretted the omission of this on two occasions.

Flushing with saline, damming off the abdomen and complicated drainage should be left to the experienced surgeon who can justify his procedure by an attempt to prove that his cases are different from those operated on in a simpler way. Nor am I ready yet to accept drainage of the thoracic duct as more than a gesture. The empiric fact that evidently peritoneal infection is taken care of principally by the lymphatics may point that way, but Gale states that as soon as the cavity is opened and the focus of infection removed, the pus is no longer under pressure, and absorption is handled by the lymphatics as general protective body forces may determine. Withhold all food or water by the mouth for at least three days, unless you have stomach tube syphonage.

No man is forced to open an abdomen, but he who does makes a moral contract to deal with any pathologic condition that may be present in a proper surgical way. Nothing said here is meant to relieve this responsibility, and we all know that difficulties of many sorts may arise in apparently simple cases. This small incision may be closed and another made elsewhere if occasion demands, but the average case is safer if the surgeon thinks of a near approach to an appendix practically always in one position, its removal through a small incision without seeing any small bowel, and the minimum of drainage, followed by careful aftertreatment.

What I wish to emphasize is that the opinion developed early in my surgical work that removal of the appendix is a complicated difficult feat, requiring time, full exposure, walling off and much drainage, was wrong. It is extremely hard to check upon the average stay of appendix cases in the hospital. The present need of hospital rooms all over the country could be greatly relieved by shortening acute appendix cases to one week. There are many deaths, many postoperative adhesions, hernias and fistulas that never do reach statistics which could be avoided by the simple expedient of doing less.

PAPILLARY CYST ADENOMA OF THE OVARY IN A CHILD

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The following case is reported, not because of the type of condition it represents, but because of the unusual age at which it occurred. Subsequent data and future progress will be reported in a later paper.

D. R., age thirteen, presented herself, complaining of pain in the abdomen and burning in the pit of the stomach. Family history was negative. Past history showed nothing other than irregular periods of gastric disturbance with eructations, nausea, vomiting and pain low down on both sides. Bowels moved daily. Menstrual periods were very irregular, beginning at twelve years of age, with a period of two weeks' duration. This one stopped, and then began again one week later, lasting one week. Since then her periods have run ten days to two weeks past every forty-eight days, with a great deal of pain. Between periods there was a marked discharge, white and thick in character.

The present condition began in August, 1924, with pain in the lower right abdomen that soon extended to the lower left as well. During the last attack and before our examination, the patient had lost about fifteen pounds weight. Physical examination showed the abdomen to have slight muscle rigidity and general fullness. There was some tenderness low down on the right side, and fluctuation was felt. No masses were palpable. Rectal examination showed fullness and increased resistance in the right adnexa. Two small nodules were felt along the right side of the uterus. There was no tenderness or pain. A distinct fluid wave was present.

Wassermann was negative, Blood count: Hgb. 86 per cent, r. b. c. 4,768,000, w. b. c. 9,000, differential normal. The urine was amber in color, appearance turbid, specific gravity 1024, albumin negative, sugar negative. Microscopic examination showed heavy urates, calcium oxalate crystals and pus cells.

Operation showed free fluid in the abdomen with a cyst of each ovary about two inches in diameter. There were grape-like projections both inside and outside the cysts, filling the whole pelvis and fixing the uterus. There was extension from the broad ligament along the parietal peritoneum to within one to one and one-half inches of the midline anterior. Pathologic examination by two pathologists showed benign papillary cyst adenoma.

At first these masses were subjected to radium and x-ray, because the patient's general condition on the table would not permit a radical operation at that time.* One year later the patient came to operation again. At this time the cysts had grown three times their original size. There was extension to the omentum with many nodules of varying size. All the cysts and the greater portion of the grape-like masses were removed at this operation. Radium and x-ray were used subsequently for the remaining growths in the omentum.** The uterus was left intact. Since then, the patient has gradually gained weight and her blood count has risen. At a later date she will receive further x-ray and radium.

TABULATION OF WEIGHT SINCE OPERATION

	Wgt. in Lbs.
At operation	110
2/20/25	105
3/13/25	111
5/ 1/25	112¾
6/ 1/25	117¼
8/27/25	121
10/2/25	119
1/12/26	115½
At second operation	100
6/20/26	90
7/ 8/26	95
7/27/26	100
12/31/26	113
2/23/27	119

TABULATION OF BLOOD COUNT READINGS

	HGB.	RBC.	WBC.
At operation	86%	4,768,000	9,200
After operation	70%	3,928,000	5,700
3/20/25	89%	4,920,000	6,800
5/ 1/25	90%	5,000,000	8,000
6/ 1/25	80%	4,680,000	6,400
8/27/25	90%	4,096,000	10,200
10/ 2/25	92%	4,120,000	6,350
1/12/26	80%	3,600,000	8,200

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* 70 milligrams of radium were used through the drainage tube for totals of 700 mg. hrs., 945 mg. hrs., and 1050 mg. hrs. respectively, totaling 2695 mg. hrs. Radiotherapy was given with 200,000 volts, 5 milliamperes, 50 cm. distance, 15 cm. square field with filtration of ¾ mm. copper and 1 mm. of aluminum. Treatments were given 75 minutes each, through a right abdominal and left abdominal portal and one central posterior portal, giving a total of 375 milliampere minutes in each of the three areas.

** Radium was used through drainage tubes in about equal amount for a total of 6558 mg. hours. X-ray treatment used at this time was 325 milliampere minutes through each of the following four portals: one anterior abdominal left, one anterior abdominal right, one posterior back left and one posterior back right.

At second operation	80%	3,486,000	7,600
6/22/26	55%	2,890,000	11,800
7 /8/26	65%	3,280,000	10,000
7/27/26	70%	3,300,000	9,800
12/31/26	80%	4,250,000	9,000
2/23/27	90%	4,800,000	9,000

COMMENT

This case presents several things of particular interest. In the first place, the tumor seldom occurs in a person so young. Erdmann and Spaulding[1] state, as do Kelly,[2] Bland,[3] Gibbon[4] and others that the usual age incidence is between twenty and thirty, and forty and fifty. Schwartz[5] reports a case of Dr. Lindell at the Jewish Hospital, Brooklyn, N. Y., which was nine years old. Doran[6] reports a case in a seven months old fetus. Our child was thirteen years old at the time of the first operation, and from the history stated perhaps she had the condition one year previously at puberty.

The second thing of interest is the fact that under radium and x-ray, the mass remained stationary in size for a period of seven months. After this time there was a steady and gradual growth of the tumor. Fluid also reformed as the growth enlarged.

Third, the question of surgery as the proper procedure of treatment comes up. As far as the subjective symptoms are concerned, the patient felt very well. Periodic blood counts remained practically the same after the first operation, there being only a slight drop in the red cells. The weight, however, picked up for a while, although later began to drop again. The mass, even with the x-ray and radium treatment, ultimately grew in size.

These facts, corroborated by a survey of the literature on the subject, stating that as complete a removal as possible was the usual procedure, led us one year later to remove as much of the growth as possible. At the present time the patient feels perfectly well, and is gradually gaining weight. Fluid has not reformed, nor have palpable masses been found.

PROGNOSIS

Several things must be considered here. Papillary cyst adenoma, according to Ewing[7] and Graves,[8] may be benign or malignant. If benign, it is very prone to become malignant. Metatasis, however, usually occurs only as far as the nodes in the parietal peritoneum and to the peritoneum itself. However, Wagner, Wilkes and Moxan, Bland-Sutton and Erdmann[9] all report metastasis to points far removed from the growth, such as lungs, mediastinum, sternum and even the groin and axilla.

The tumor likewise is a slow growing affair. Frank[10] reports that the average length of life for people with this growth is five years, with twenty-two as the longest case on record. Such men as Erdmann and Spaulding,[1] Bland,[3] Codman,[11] Thornton[12] and Schwartz[5] report similar results. Grad[13] states that if benign, the growth is slower than if the tumor has undergone malignant degeneration. Erdmann and Spaulding[1] state that papillary cyst adenoma grows much faster in the young than in the old. Furthermore, several report that, after the main portion of the growth is excised, the remaining studs on the peritoneum often entirely disappear. Pfannensteil[14] reports twelve such cases, showing no metastatic growths after removal of the primary growth.

These facts present an uncertain prognosis as to the life of the individual. One can safely say that life has been prolonged by the removal of the growth, and also that there is a remote possibility of an absolute cure.

CONCLUSIONS

In regard to this particular case, the following conclusions may be drawn:

1. Thirteen is a rare age for this type of condition to occur.
2. Under radium and x-ray there was a temporary retardation of growth.
3. Prognosis is uncertain.

I wish to thank Drs. A. E. Mackay, Otis B. Wight, and Jos. D. Sternberg for their valuable aid and suggestions in the treatment of this case and the preparation of this paper.

BIBLIOGRAPHY

1. Erdmann and Spaulding: Papillary Cystadenoma of the Ovary. S. G. & O., Oct. 1921, Vol. xxxiii, No. 4.
2. Kelley, Howard: Operative Gynecology, 1909, Vol. ii.
3. Bland, P. B.: Personal communication.
4. Gibbon, J. W.: Papillary Cystadenoma of the Ovary. Va. Med. Month. Vol. 49, No. 12, Mar. 1923.
5. Schwartz, L. S.: Papillomatous Cysts of the Ovary (11 cases). Am. Jo. Obst. 78-1918.
6. Doran: Proliferating Cyst in the Ovary of a Seven Months Fetus. Tr. Path. Soc. 1881, xxxii, 147.
7. Ewing, James: Neoplastic Diseases. 1919.
8. Graves, W. P.: Gynecology, 1920.
9. Wagner, Wilkes and Moxan, Bland-Sutton and Erdmann: Quoted by Gibbon. Va. Med. Month. Vol. 49, No. 12, Mar., 1923.
10. Frank, R. T.: Gynecologic and Obstetric Pathology, 1922.
11. Codman, E. A.: Treatment of Malignant Peritonitis. Am. Surg. 1918, lxviii, 338.
12. Thornton, J. K.: Fungating Papillomata of both Ovaries. Tr. London Obst. Soc. 1887, xxviii.
13. Grad, H.: Perforation of Vagina by Papillary Cyst of the Ovary. Am. J. Obst. 1918, lxxvii, 588.
14. Pfannensteil: Veit's Handbuch der Gynäkologie.

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EDITORIAL

SHALL THE DOCTOR CONSERVE HIS OWN ENERGIES?

A problem that is agitating many doctors is how they may find time to attend enough meetings of various hospital visiting staffs to fulfill the rules of the American College of Surgeons for hospital standardization. These rules require that visiting physicians attend not less than seventy per cent of the staff meetings which are held monthly or oftener. Probably few meetings are as well attended as that and for what, to the casual observer, seems to be fairly good reasons. Apparently the American College of Surgeons, when it made these rules, had in mind conditions that exist in the Eastern states and did not sufficiently consider those existing in other sections of the country. It is probable that relatively few men in the East belong on more than one regular visiting staff, with a few instances in which they may be members of several staffs. But with the open staff system in vogue in the West difficulties arise. A majority of doctors, once they have achieved a modicum of success, are members of two, three, four or more visiting or general staffs, or associations, as they are sometimes classified. It is obviously impossible for exceptionally busy men who are on several staffs to give one night a month to each hospital in addition to the time devoted to state, county and other medical societies and special committees. This is particularly true of those who specialize and who find it necessary to maintain relations with a number of institutions.

As an example of the difficulties, in one of the cities served by NORTHWEST MEDICINE, recently a group of ten to twenty men averaged from ten to sixteen hours each in a single week, in attendance on medical society meetings and incidental entertainment of visiting guests. That week the possibilities of such attendance, including meetings at which these guests spoke, hospital staff meetings and special committee meetings for the state and county societies, was about twenty hours. Several of these men are known to have attended not less than fifteen hours, not including time which some of them gave to autopsy and other nonremunerative work and teaching, to which in several instances several hours were devoted.

Yet the following week a vigorous plea was made for better attendance upon the staff meeting of one of the hospitals, to the end that the requirements of the American College of Surgeons might be fulfilled.

Attendance upon meetings, merely for the sake of quantity effect, is valueless unless the attendant receives benefit. It is obvious, for instance, that the ophthalmologist will hear little of immediate value from a discussion of diseases of the knee joint. It may be argued that the specialist should receive broad training and that he will be the better for having intimate acquaintance with the entire field of medicine and surgery. But if, in giving much time to general subjects, he has to curtail the amount of time spent in investigating diseases in which he is most skilled, it is doubtful if he is pursuing the best plan either for his own betterment or that of the entire profession.

The obituary columns of the *J. A. M. A.* indicate that the most striking cause of death of physicians is some form of cardiovascular disease. If one will go through these lists, he will be astounded at the frequency with which death is ascribed to heart disease, arteriosclerosis, cardiovascular or cardiorenal disease, apoplexy and allied disorders. One might also note the comparatively early age at which many of these deaths occur. Almost everyone is convinced that most of these disorders are the end-results of infections. But those most familiar with cardiovascular disorders are most apt to believe that excesses in work and emotional states are, if not actually primarily causative, certainly markedly contributing factors to such disease. Long ago Osler called attention to the great frequency of angina pectoris among doctors as compared with members of other professions, and by inference, if not in so many words, conveyed the opinion that long hours and strain were largely responsible.

Doctors continually preach moderation and the practice of personal hygiene to their patients. Strongly individualistic by training and environment, apt to want their own way and to do as they please, they make small personal application of such teachings to themselves. When will doctors learn that there is a limit to which even the strongest may not be driven with impunity? Desirable as are staff meetings, earnestly as one may advocate frequent attendance upon all forms of medical meetings, is there not a line over which one should not pass? Do not physicians owe to themselves and their families the duty of conserving their energies and directing them along the most useful and least self-destructive channels? Preachments urging more work usually fall upon the ears of those who are already doing their full share. The indifferent and self-sufficient type pay little heed but go their own way, unaffected by the call to extra duty.

The conclusion that might be drawn from the preceding is, not that medical societies and meetings of hospital staffs shall be neglected, but that some provision shall be made whereby the most earnest and regular attendants may not, out of zest of pride and duty, attempt to do too much. Some modification of the rules seems necessary and the very tentative suggestion is made that those who belong to several visiting staffs, and particularly those who specialize, shall not be required to attend all or even three-fourths or one-half of the meetings of any institution, but that such members shall be required to attend one or another of the staff meetings each month, making the total number of such visitations equal three-fourths or even one hundred per cent of the total number of meetings of any one staff. And, of course, this suggestion applies only to the purely scientific sections and has no bearing upon the activities of the managing staffs of the hospitals.

SIGNIFICANCE OF THE BASIC SCIENCE LAW

The Basic Science bill, promoted before the Washington legislature by the Public Health League, has passed both Senate and House and has been signed by Governor Hartley. At the last session he vetoed a similar bill on the ground that the examining board was to be appointed only from the faculty of the State University. The present bill provides for a board composed of members both from this institution and the State College at Pullman.

This law, similar to that existing in some other states, provides that hereafter everyone applying for license to treat the sick in the state of Washington, whether doctors of medicine or representatives of any other style of practice, shall first pass an examination in anatomy, physiology, chemistry, pathology and hygiene before an examining board from the faculties of the above mentioned institutions. Since this board will not include physicians or other practitioners in its personnel, and papers presented before it will be designated only by numbers, no charge of partiality can be brought against the examiners. Every candidate, therefore, will be judged strictly according to his familiarity with these subjects in which he is examined. The curricula of all educational institutions, which train men and women for the treatment of the ills of mankind, provide for teaching these fundamental branches. Therefore, every one engaged in the healing art should be prepared to demonstrate his knowledge of these scientific departments, on which are based subsequent lines of study.

It is to be noted that this examination will be required not only of practitioners appearing for license by examination before their respective boards, but will also apply to those obtaining licensure by means of reciprocity with other states. At present Washington offers most liberal opportunities for medical practitioners from nearly all states of the Union by means of endorsement of licenses, regardless of their previous preparation and experience. Examinations, according to this basic science law, will thus serve as a sifting process of candidates from the medical profession as well as from the various cults who now establish themselves with greatest ease and freedom within the borders of this state.

PERIODIC HEALTH EXAMINATIONS IN WASHINGTON

Interest in periodic health examinations of apparently well people is being promoted in Washington through the state medical association, inspired by the enthusiasm of its president, Dr. H. G. Willard, of Tacoma. On April 4 a special demonstration of this work will be scheduled in Seattle, when Drs. F. D. Stricker and Lawrence Selling, of Portland, will give a demonstration of this form of examination for the benefit of the profession in that part of the state. These men have taken an active part in this work in Oregon, and are, therefore, in a position to explain the details in an effective manner. Drs. L. G. Woodford, of Everett, and W. B. Penney, of Tacoma, will also be present to aid in the demonstration, both of them having had experience in this line of work. It is anticipated that this effort will help to inaugurate the movement and promote its development in this state. Later similar demonstraitons will be presented in other cities.

PACIFIC NORTHWEST PROGRAM

The annual meeting of Pacific Northwest Medical Association will be held at Boise, June 27-29, this being the first meeting of this organization in Idaho. The usual high quality of speakers will be observed. As is usual, this will be the greatest medical meeting held during the year in this Northwest section. This will be a most desirable opportunity for visiting Idaho and noting the attractions of that part of the state for those who have never visited Boise.

The program of speakers and their subjects will be as follows:

Dr. Dean Lewis of Johns Hopkins University: (1) Lesions of the Arteries of the Extremities. (2) Our Present Knowledge of Goiter. (3) A Clinic.

Dr. W. R. MacAusland of Boston: (1) Operative Procedures in Infantile Paralysis. (2) A Paper on Arthritis. (3) Fractures from the Standpoint of the Orthopedic Surgeon.

Dr. Arthur L. Bloomfield of Stanford University: (1) Clinical Physiology of the Stomach in Relation to Symptomatology. (2) Clinical and Laboratory Diagnosis of Gastric Disorders. (3) The Significance and Symptomatology of Gastric Anacidity.

Prof. T. Wingate Todd of the Anatomical Laboratory of Western Reserve University: Three subjects not yet announced.

Dr. Alfred Scott Warthin, Pathologist from the University of Michigan: (1) The Heredity of Disease. (2) The Nature of Pernicious Anemia. (3) Pathologic Evidence as to the Curability of Nephritis.

Dr. Stuart Pritchard of Battle Creek Sanitarium, Battle Creek, Michigan: (1) Thoracic Pain and Its Significance. (2) Bronchiectasis. (3) Pulmonary Tuberculosis.

Dr. Frank Hinman of San Francisco: (1) The Evolution of the Process of Excretion and Relation of Structure to Renal Function. (2) Presumptive Evidence of Urologic Disease. (3) Obstruction of the Urinary Tract, Cause, Effect and Differential Diagnosis.

Dr. Harold Amoss of Johns Hopkins University: (1) Poliomyelitis. (2) Erysipelas. (3) Sporotrichosis.

Dr. R. D. Mussey of the Mayo Clinic: (1) Pernicious Vomiting. (2) Toxemias of the Later Months of Pregnancy. (3) Surgery of Necessity During Pregnancy.

Dr. E. Starr Judd of the Mayo Clinic: (1) Ulcer of the Duodenum. (2) Ulcer of the Stomach. (3) Cholecystitis.

Dr. Herbert M. Evans of the University of California: (1) On the Function of the Anterior Hypophysis. (2) On the Relations of Nutrition to Fertility. (3) A Summary of the Chief Facts Concerning the Five Accessory Food Substances.

Dr. John de J. Pemberton of the Mayo Clinic: Two papers on goiter, the third subject not yet announced.

HENRY WALDO COE

November 4, 1857–February 15, 1927

The death of Dr. Coe came as a surprise to most of his friends, few of whom had any intimation that his health was seriously impaired. Physicians who knew him well had observed for two or three years that he walked more and more slowly and had lost much of his old time physical vigor, but were unaware of the gravity of his illness. Three weeks before his death, while in California, he had an attack of angina pectoris and soon thereafter he entered a sanatorium at Glendale for a rest cure. Here he improved so much that a few minutes before he answered the final call he was engaged in dictating correspondence, and was in a cheerful frame of mind. Suddenly he gasped a time or two and was gone, adding another to the long list of physicians who have succumbed to cardiovascular disease.

Dr. Coe's life was a busy one. His early experiences in North Dakota, then pioneer country, as he sometimes related them, were amusing and instructive as showing how a determined young man, little more than a youth and penniless, overcame obstacles. In Oregon he was no less resourceful and though he experienced many reverses he was more often a winner than a loser. Some of his ventures and achievements are listed in another column. Among the more notable was the great influence he exercised as delegate to the American Medical Association in bringing that organization to Portland for its annual meeting, during the Lewis and Clark Exposition in 1905. For this he was honored with the presidency of the Portland City and County Medical Society so that he might serve, which he did most effectively, in planning the reception and entertainment of the host of medical men who visited Portland during the meetings of the association. Perhaps for him his greatest achievement was the formation of a life long friendship with Theodore Roosevelt, whom he memorialized in a noble bronze equestrian statue erected in Portland, mute evidence of his worship of that great American hero. Portland parks are now or soon will be adorned with other statues which he gave to the city, including likenesses of Jeanne d'Arc, Washington and Lincoln.

Dr. Coe was versatile. He was one time mayor of Mandan and a member of the North Dakota Legislature. He was either delegate or alternate to five consecutive national Republican conventions and in 1912 was national committeeman from Oregon for the Progressive party, whose idol was Roosevelt. He served a term as state senator in Oregon. His first business venture was connected with a newspaper in Minnesota. Later he was interested in farming, dairying, mining, fruit raising, real estate and banking. Physician, newspaper man, medical journalist, business man, politician, banker, world traveler, patron of arts, member of many clubs, Mason of high standing indicate something of the scope of his activities.

Dr. Coe's gospel was that of work well directed and so designed as to accomplish most, with reasonable conservation of his own energies. He never believed in handling minor details which could be cared for, perhaps to better advantage by others. He liked to organize and he possessed and exhibited conspicuously successful powers along that line. With all he got much enjoyment out of life, mingled with and met people in every station in life. He left a definite imprint not only on Portland but upon the entire Pacific Northwest which will not soon be forgotten.

MEDICAL NOTES

OREGON

Investigates Tuberbulosis Cure. Following the recommendation of the late Prof. E. F. Pernot, of the North Pacific Dental College, Mayor E. F. Baker of Portland on February 6 instructed the city health department to conduct an investigation of the alleged tuberculosis cure of Dr. George Kirkpatrick, a Portland veterinarian. A series of experiments of the effect of the product on tuberculous cows was begun at the Portland stock yards, representatives of the United States bureau of animal industry cooperating. The University of Oregon Medical School and the National Tuberculosis Association have declined to participate in the investigation on account of the secrecy which Dr. Kirkpatrick has maintained concerning his discovery. Dr. Ray Matson, director of Portland Open-Air Sanatorium, in an address before the Portland City Club Feb. 4, branded the "cure" as "absolutely worthless."

New Mediolal Building Planned. A ten-story building, containing offices exclusively for physicians and dentists, is soon to be erected at the northwest corner of Eleventh and Taylor Streets, Portland, by the American Investment Co.

Hospital is Sold. Mr. A. J. Lyle, manager of the Klamath General hospital, has purchased the institution. Mr. Lyle intends to make extensive improvements and to increase the capacity of the hospital to 75 beds.

Dr. Henry Helmholtz, chief of the division of pediatrics at the Mayo Clinic, Rochester, Minn., recently visited the Marion County Child Health Demonstration at Salem. He conducted a clinic at the Salem hospital and addressed a meeting of the Marion-Polk-Yamhill County Medical Society.

Medical Missionary Lectures. Dr. Wilfred T. Grenfell, the noted medical missionary of Labrador, gave a popular lecture at Newbury on Feb. 9.

Marion-Polk-Yamhill County Medical Society has elected the following officers for 1927: President, Dr. L. O. Clement, Salem; first vice-president, Dr. O. R. Ross, Salem; second vice-president, Dr. George Knott, Independence; secretary-treasurer, Dr. W. W. Baum, Salem.

Dr. Arthur H. Morton has located for eye, ear, nose and throat practice in Eugene. For the past eighteen years he has practiced in Korea, during part of which time he was professor of ophthalmology in a medical school at Seoul, the capital city.

Dr. Francis P. Adams, of Rainier, has moved to Wasco, where he will serve in a locum tenens capacity for six months.

Drs. George E. Dix and Robert C. Dixon, of Marshfield, have formed a partnership.

WASHINGTON

Granted State Licenses. At the January meeting of the State Board of Medical Examiners, the following list of nine applicants were successful in passing the examinations: A. J. Barter, Tacoma; O. H. Fulcher, E. D. Lineberry, H E. Rawson and S. Yoshioka, Seattle; J. H. Coleman, Berne; and Geo. More, Nanaimo, B. C.

Licenses by reciprocity were granted to F. W. Chandler, Everett; B. N. Collier, Belle Conrad, J. E. Gahring, R. Janson, A. L. Mayfield, I. O. McLemore, Seattle; D. E. Egan, Yakima; E. G. Longley, Bremerton; E. W. Templeton, Snoqualmie Falls; E. L. Spohn, Walla Walla; J. H. Hoskins, Chehalis; E. T. Doehring, Mobile, Ala.

New Hospital Dedicated. The new Walla Walla Valley General hospital, at Walla Walla, was formally dedicated Feb. 8. The structure, which cost $200,000, is fireproof throughout. It will provide accommodations for fifty patients. Miss Leora Worthington, a graduate of St. Luke's hospital, New York, is superintendent.

Indians to Have Tuberculosis Sanatorium. The United States Congress has provided $60,000 for the erection of a tuberculosis hospital for Indians at Fort Simcoe on the Yakima Indian Reservation.

Sanitarium Adopts Open Plan. The Walla Walla Sanitarium at College Place has determined to become an open staff institution, and will extend its privileges to all accredited physicians.

Plan Clinic. A group of Tacoma physicians and dentists will provide free medical and dental clinics for occupants of the Ozanam Home and other destitute persons. This home is sponsored by the St. Vincent de Paul Society.

Surgeons to Meet. The regional convention of the American College of Surgeons will be held at Seattle April 11-12. Dr. J. B. Eagleson is in charge of the local arrangements for the meeting.

Broadcasts Health Lecturres. The Whitman County Medical Society, under the direction of the U. S. Public Health Service, has inaugurated a series of biweekly lectures on public health topics, which are to be broadcast by radio.

North Pacific Pediatric Society held its midwinter meeting January 29 at the Monte Cristo Hotel, Everett, under the presidency of Dr. H. L. Moon, Seattle. Dr. C. F. Eikenbary, of Seattle, the guest of honor, delivered an address on "Perthe's Disease."

Medical Examination for Prisoners. Dr. H. E. Mereness, federal inspector of prisons, has completed plans for medical examination of the convicts at McNeil Island Penitentiary. Heretofore this service has been lacking in the federal penitentiaries.

Grays Harbor County Medical Society held its annual meeting in January, at which the following officers were elected for the ensuing year: President, Dr. Ed. E. Maxey, Aberdeen; vice-president, Dr. F. N. Bjerkin, Aberdeen; secretary-treasurer, Dr. E. L. Calhoun, Hoquiam.

The February meeting was held at Elma on the evening of the sixteenth. The society were the guests of Dr. Howard L. Hull, at Oakhurst Sanatorium. After the dinner the evening was devoted to diagnosis and treatment of tuberculosis.

Snohomish County Medical Society held its February meeting at Everett. Dr. W. C. Cox, of Everett, reviewed the history of medical practice in Snohomish county.

Pioneer Physician. Dr. Thomas L. Catterson is now completing forty years of active practice in Spokane. He is a charter member of the Spokane County Medical Society, which was organized in 1888.

Elected President. Dr. Ira C. Brown, Seattle city school medical officer, has been elected president of the Seattle Chapter, Sons of the American Revolution.

Dr. D. S. Dickerson, formerly neurologist at U. S. Veterans' Hospital at American Lake, has located for practice at Seattle, where he will be associated with Dr. Geo. W. Swift.

Dr. J. B. Beeson, of Seattle, has moved to Ketchikan, Alaska, where he will engage in practice. He was formerly chief surgeon of the Alaska Railroad at Anchorage.

Dr. P. D. McCornack, of Spokane, was recently confined to the Sacred Heart hospital, Spokane, by an attack of appendicitis.

Dr. Frank Clancy recently returned to Seattle after six months of postgraduate study in Vienna.

Dr. E. W. Templeton, of Wibauz, who has been temporarily caring for the practice of the late Dr. R. T. Burke of Snoqualmie Falls, has opened an office at Enumclaw.

Dr. J. H. Hoskins, formerly of Rolla, N. D., has begun practice in Chehalis.

IDAHO

Hospital Elects Staff. Dr. A. F. McClusky, of Buhl, has been elected president and Dr. G. C. Halley, secretary of the Twin Falls County General hospital. Dr. Ora Keith has been appointed hospital anesthetist.

Appointed County Physician. Dr. Fayre Kenagy, of Rupert, has been appointed county physician of Minidoka county.

Dr. W. H. Schuyler, who has recently practiced at McCall and New Meadows, has moved to Mountain Home.

Dr. W. A. Wright, pioneer Pocatello physician, recently underwent an appendicitis operation at St. Anthony's hospital, Pocatello.

South Side Medical Society held its annual meeting January 28. The following officers were elected for the ensuing year: President, Dr. E. L. Simonton, Wendell; vice-president, Dr. J. F. Schmershall, Jerome; secretary-treasurer, Dr. W. F. Passer, Twin Falls.

OBITUARIES

Dr. Henry Waldo Coe, of Portland, Ore., died in Glendale, Calif., February 5, 1927, aged 70 years, the immediate cause of death being angina pectoris. He was born in Waupon, Wis., November 4, 1857. He was the son of Dr. Samuel Buel Coe and Mary Cronkhite Coe. He graduated from Long Island Medical College in 1880 and immediately repaired to Mandan, N. D., where he practiced medicine for ten years. He came to Portland in 1890 and soon thereafter specialized in diseases of the brain and nervous system. In 1893 he founded a sanatorium which, under the name of Mt. Tabor Sanatorium and later, Crystal Springs Sanatorium, by 1905 had achieved large proportions. In 1903 he obtained the government contract for the care of the Alaskan insane who were domiciled on the grounds of Crystal Springs Sanatorium until 1910, at which time that institution passed out of existence and the Alaska patients were taken to a new institution, Morningside Hospital, which Dr. Coe conducted to the time of his death.

At various times he was president of the North Dakota State Medical Association, of the Oregon State Medical Association, of the Portland City and County Medical Society and of the American Medical Editors Association, and for a time was the Oregon delegate to the American Medical Association. He was also professor of anatomy and of nervous and mental diseases in Willamette University, a member of the American Psychiatric Association and other medical societies. He founded the *Medical Sentinel* in 1903 and was owner and editor continuously thereafter. Although he did little active practice after 1903, he kept close contact with his sanatorium and maintained interest in medical matters until his death. Since 1910 most of his time was given to the care of Morningside Hospital and the Medical Sentinel. He was interested in many business affairs and was founder, president or director of no less than five banks in Washington and Oregon. He was concerned with numerous other business ventures which might be mentioned here, were it not that lack of space forbids.

Dr. Arthur P. Calhoun, of Seattle, Wash., died January 30, at a local hospital following a brief illness from pneumonia, aged 48 years. He was born in Seattle in 1878, and graduated from Stanford

University Medical School, San Francisco, in 1898. He served for several years as assistant superintendent of Eastern Washington Hospital for the Insane at Medical Lake, and was later appointed superintendent of Western Washington Hospital for the Insane at Fort Steilacoom. In recent years he was engaged in neuropsychiatric practice in Seattle. During the World War he was chief of the psychiatric division of the army hospital at Camp Lewis.

Dr. Curtis Holcomb, Portland, Ore., died January 26, at a local hospital following a long illness. He was born in Portland in 1863, and graduated from the Willamette University medical school in 1887, since which time he practiced continuously in his native city. He served as district surgeon for the O. W. R. & N. company for 38 years. He is survived by two sons, Drs. Blair and Roger Holcomb, of Portland.

Dr. Charles M. Barbee, Portland, Ore., died suddenly at his home February 13, aged 56 years. He was born in Missouri in 1871, and studied medicine at Kansas City Medical College, graduating in 1902. He practiced in Kansas City, Mo., before moving to Portland in 1910. He was at one time president of the Portland City and County Medical Society, and served on the Oregon State Board of Health from 1923 until the time of his death.

Dr. J. B. Munly, Spokane, Wash., died suddenly at his home Feb. 27, aged 59 years. He spent his early life in Portland, Ore., where he graduated from the medical department of the University of Oregon in 1896. He had practiced continuously in Spokane for thirty years, and was assistant surgeon for the O. W. & R. Railway.

Dr. J. J. Tilton, Centralia, Wash., died at a local hospital Feb. 15, following a brief attack of pneumonia. He was born in 1882, and graduated from the Hospital College of Medicine, Louisville, Ky., in 1907. He practiced pediatrics at Spokane for several years before moving to Centralia.

Dr. Charles P. Thomas died at Santa Monica, Calif., aged 63 years. He was born in Missouri in 1864, and graduated from the University of Oregon Medical School at Portland in 1888. He located for practice at Everett, Wash., where he remained until the late '90s, when he moved to Spokane. He was a prominent practitioner in that city until 1912, when he moved to Los Angeles, Calif. He practiced in that city until the time of his death.

Case of Maternal Tetany Relieved by Parathyroid Extract-Collip. The case reported by Hans Lisser, R. Knight Smith and H. Clare Shepardson, San Francisco (*Journal A. M. A.*, Feb. 12, 1927), seems to be the first one of maternal tetany to be treated with this new extract. The observations and the results obtained justify the assumption that at least certain of the cases of maternal tetany result from an impaired parathyroid activity rather than from an actual paucity of calcium within the maternal organism. The prompt administration of active parathyroid hormone-Collip in adequate dosage, without the aid of any other therapeutic agent, even calcium, relieved the hyperexcitability of the nervous system.

REPORTS OF SOCIETY MEETINGS

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., A. T. Wanamaker; Secty., W. W. Bell

King County Medical Society held a general meeting at Seattle, February 7, in the auditorium of the Medical and Dental Bldg. There were 103 members present. Minutes of the meeting of Jan. 3 were read and approved.

Dr. C. E. Watts presented five specimens of pathologic hearts with coronary thrombosis, giving histories of each.

Dr. Frederick Epplen, of Spokane, read a paper on "Some of the New Views on Nephritis According to Addis." He mentioned the observations of Bright, in 1827, concerning urinary and blood changes in nephritis. Addis draws conclusions regarding anatomic changes from clinical observations, a thing that Bright had previously attempted. Addis classifies Bright's disease under the headings (1) hemorrhagic nephritis, (2) degenerative, (3) arteriosclerosis. The technic was described of collecting urine for the differentiation of the different classes of nephritis. The various forms of casts were described with their interpretation, special attention being paid to the meaning of broad casts which have never been well described. The different types of nephritis are distinguished by different varieties of casts, which were detailed together with their significance.

A meeting of the medical section of the King County Society was held Feb. 14, with Chairman Homer Wheelon presiding.

The first paper was presented by Dr. Conrad Jacobson on "Surgical Treatment of Carcinoma." Emphasis was made on the importance of clinical surgical pathologic diagnosis for treatment of this condition, including the history, clinical examination, laboratory work, with frozen sections of tumor. The importance of biopsy was explained, with the necessity of concluding the operation at one sitting and avoiding the two stage procedure whenever possible. Dissemination of cancer by massage and rough handling was stressed. A description was given of anatomic relations and the methods of metastasis through the blood stream and lymphatics. Note was made of the varying individual resistance to the cancerous growth. The importance of removing precancerous lesions was emphasized. Under treatment the roles of surgery and radiology were outlined, also referring to the electrocautery and endotherm knife. Preoperative and postoperative radiations were discussed with cautions concerning their use. Surgery as applied to cancer in different locations in the body was discussed, attention being given to special consideration of each. In order to obtain most satisfactory results the cooperation of surgeon, surgical pathologist and radiologist is essential.

The second paper was by Dr. C. A. Smith on "Electrotherapy and the Treatment of Carcinoma." He stated that results in this form of treatment depended upon heat. The difference was described between heat applied through the cautery, which itself is heated, and that from the high frequency current, where the heat is obtained by the resistance of the tissues to its passage, while the electrodes employed remain cool.

The three forms of current employed were described. The Oudin or monopolar current, with low amperage and high voltage produce results known as desiccation, which is used for the removal of superficial epitheliomata, as well as nonmalignant growths. The bipolar, or d'Arsonval current, which employs a so-called large indifferent electrode and the active electrode, which is ordinarily a needle, produces results known as coagulation. This current is used to destroy larger cancerous growths, as in the tongue, mouth, cervix and rectum. The third form of current, called the endotherm knife by Wyeth, is obtained by the addition of radio vacuum tubes to the diathermy apparatus, by which a current of excessively high frequency is obtained. The needle employed cuts through the tissues with the accuracy and keenness of a knife, hence its designation. This has been used for more extensive operations, such as the removal of the cancerous breast. The incision is bloodless and is not subject to metastasis.

The advantages of removing malignancy with these methods are that the growth is removed entirely at one sitting, there is no hemorrhage since the blood vessels are coagulated by the heat, metastasis is prevented on account of sealing the lymphatics by the same means, scar tissue does not result, and healing is accompanied by skin of practically normal appearance.

LEWIS COUNTY MEDICAL SOCIETY

Pres., E. W. Kennicott; Secty., Rush Banks

Lewis County Medical Society held its monthly meeting at Chehalis, Feb. 14.

The program presented an address by Dr. A. O. Loe, of Seattle, on "Penetrating Wounds of the Abdomen." Dr. J. I. Durand, of Seattle, read a paper on "Therapeutic Use of Blood in Diseases of Children."

PIERCE COUNTY MEDICAL SOCIETY

Pres., E. F. Dodds; Secy., W. B. Penney

The regular meeting of Pierce County Medical Society was held in its rooms, Tacoma, Wash., February 8, 1927. Minutes of the previous meeting read and approved.

A report from the Auditing Committee was read and accepted.

A letter was read from Dr. Scott S. Jones, who is taking postgraduate work at the University of Pennsylvania.

PROGRAM

Dr. L. A. Hopkins spoke of visiting the state institution for the feebleminded at Medical Lake, and gave an interesting talk relative to conditions there.

A letter was read from Dr. H. G. Willard, President of the Washington State Medical Association, relative to the Scientific Speakers' Bureau, giving a list of the speakers.

Dr. P. F. Guy read a paper on "Observations in the Boston Children's Hospital." He gave many interesting side lights on this children's hospital.

A paper on "Treatment of Fractures into the Knee Joint" was given by Dr. Roger Anderson, of Seattle. This paper was illustrated with moving pictures and stereopticon slides, illustrating the pathology and treatment of fractures into the knee joint. The paper was discussed by Drs. C. D. Hunter, T. B. Curran and W. R. Leaverton.

SPOKANE COUNTY MEDICAL SOCIETY

Pres., Mitchell Langworthy; Secty., R. M. Schulz,

Spokane County Medical Society held a regular meeting at Spokane, Feb. 10.

An address was delivered by Dr. J. I. Durand of Seattle, his subject being "Injection of Blood as a Therapeutic Measure in Diseases of Children." Dr. A. L. Hart spoke on "Research in Histology and Pathology of Tuberculous Infections." Dr. A. E. Stuht, director of the state department of health, also addressed the society.

WALLA WALLA VALLEY MEDICAL SOCIETY

Pres., E. L. Whitney; Secty., A. E. Lange

Walla Walla Valley Medical Society held a meeting at Walla Walla Feb. 10. It was preceded by a dinner, the honor guests being Drs. H. G. Willard, of Tacoma, president of the Washington State Medical Association, and George C. Miller, of Seattle.

Later Dr. Willard discussed the work of the state association and Dr. Miller read a paper on the subject of "Gastric Ulcer."

PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

Pres., H. V. Wurdeman; Secty., M. J. Morris

A meeting of Puget Sound Academy of Ophthalmology and Oto-Laryngology was held at Seattle, Feb. 15, at 8:15 p. m., President Wurdemann presiding. Minutes of the last meeting were read and approved. Committees for the year were appointed by the President.

Dr. C. W. Shannon exhibited a new ligature carrier which is to be put on the market by the Pfau Instrument Company, explaining its mechanism and applications.

PROGRAM

Case of "West's Operation for Epiphora," by Dr. J. Edward Clark. The man, seventy years old, was first seen five years ago with epiphora on the right side and had a chronic suppurative dachryocystitis on the left. He performed West's operation on the left side and got immediate complete relief. One year later, unable to obtain relief for epiphora on the other side the same operation was performed on that side. The patient has had no recurrence to the present time.

In discussion Dr. C. W. Shannon said he uses the Mosher operation instead of the West, and gave a description of it.

Dr. B. E. Washburn said the West operation was not performed in any of the countries in Asia that he visited recently, all operators preferring extirpation of the sac. It was performed in Austria but a contraindication given to the procedure was stricture of the canaliculus.

"An Unusual Case of Cyclitis," by Dr. J. Edward Clark. Man aged 28, seen first February 2, had complained of poor vision in right eye for two days. The findings are typical of chronic iridocyclitis, probably tuberculosis, with heavy deposit "mutton fat" droplets, triangular, on Descemet's membrane, complete adhesion of semidilated iris, to lens which broke up easily, leaving perfect ring of pigment on lens. Blood Wassermann negative. Teeth negative. Infected tonsils. Advised tonsillectomy.

In discussion Dr. Walter Hoffman said his experience with tuberculin in these cases has been very favorable. He has been doubtful whether the benefit was due to reaction of the foreign protein or to some specific action of the bacterial vaccine.

"A Case of Extensive Choroidites," by Dr. J. Thomas Dowling. Man, 46 years. Complaint, poor vision. Five years ago had a small spot before the left eye which rapidly became larger and other spots appeared. In about two months he had an attack of iritis, lasting about six months. Tonsils and several teeth were removed. Two months later he had a more severe attack of iritis in the right eye lasting three months. Pupils react to light and accommodation. Vision in right 20/65, in left, 20/50, but says everything looks hazy. The retina of each eye shows a very extensive choroiditis, many patches being old and atrophic in character and a few active spots being present in his right eye.

In discussion Dr. L. L. McCoy described a case suggestive of this, whose condition was improved by removal of polypi and draining antrum.

"Case of Keratitis Scleratoides," by Dr. H. V. Wurdeman. A man, seen in September, 1919, with history of coal injury to right cornea. In July, 1923, returned with a macula and superficial ulceration. In May, 1926, the macula was large. In January, 1927, had profound keratitis with yellowish coloration and formation of new vessels. Returned Feb. 15 for attention to teeth and tonsils.

"Case of Trachoma, Second Stage," Dr. H. V. Wurdeman. Fisherman, seen October 4, 1926, contracted sore eyes nine months before in Alaska. Immediate treatment by expression brossage with stiff brush and gauze, 1 to 500 bichloride solution, followed later by almost daily treatment with bichloride solution, blue stone, zinc, etc. Now in practically cured condition.

IDAHO

UPPER SNAKE RIVER MEDICAL SOCIETY

Pres., T. A. Ellison; Secty., W. T. Sutherland

Upper Snake River Medical Society held a meeting at Rigby, January 19.

Dr. Clamor Gavin of Rexburg, delivered an address on "Blood Sedimentation Tests." The following officers of the society were elected for the ensuing year: President, Dr. Ray Fisher, Rigby; vice-president, Dr. S. F. Price, Ririe; secretary-treasurer, Dr. W. B. West, St. Anthony.

CORRESPONDENCE

Baltimore, February 3, 1927.

TISSUE DIAGNOSIS IN THE OPERATING ROOM

AND IMMEDIATE COVER-SLIP EXAMINATIONS OF ALL FLUIDS AND PUS

To the Editor:

I will consider it a courtesy if you will publish this letter in your journal, as I am anxious to come in correspondence with pathologists and surgeons interested in the immediate examination, by frozen section, of tissue in the operating room and the immediate cover-slip studies of smears from all fluids and pus.

Microscopic examinations of stained frozen sections has been possible for more than a quarter of a century. The staining of unfixed frozen sections with polychrome methylene blue and other stains is a well-established procedure. In many operating rooms in university and other large and small surgical clinics, provisions for these immediate diagnostic studies have not only been available, but have been in practical use for years, while unfortunately on the other side, this diagnostic part of the operating room is conspicuous by its absence in many clinics.

Before 1915 it was rarely necessary for a surgeon well trained in gross pathology to need a frozen section to help him in diagnosis at the operating table. Since 1915 and especially since 1922, the public has become so enlightened that malignant disease, formerly easily recognized either clinically or in the gross, now appears in our operating rooms devoid of its easily recognized clinical and gross appearance and can only be properly discovered by an immediate frozen section. The majority of operating rooms are not equipped or prepared for this new diagnostic test.

The first essential part for this diagnosis is the technician, one to cut and stain the frozen section, or to make and stain the smear. The second is a pathologist trained to interpret it. It is possible for the surgeon to be all three in himself, and some young surgeons are so equipped. In others it is a dual combination—surgeon and pathologist in one, and the technician. More frequently it is three—operator, technician and pathologist. It makes little difference whether it is one, two or three individuals, providing each has the equipment and training for this most difficult diagnostic test.

In the address as chairman of the surgical section of the Southern Medical Association, I discussed biopsy, and this paper has been published in the *Southern Medical Journal* for January, 1927 (Vol. XX, page 18). A reprint of this paper will be sent to anyone on request. The chief object of this letter is to come in contact with surgeons and pathologists who are sufficiently interested in this problem to discuss it either by correspondence, or by attending a meeting in the surgical pathologic laboratory of the Johns Hopkins Hospital, either the Monday before or the Friday after the meeting of the American Medical Association in Washington.

Schools for technicians may have to be established in different sections of the country, and the surgical pathologic laboratories of the medical schools and the larger surgical clinics should offer courses in this tissue diagnosis, so that surgeons may learn to become their own pathologists, or pathologists learn the particular needs of the surgeon in tissue diagnosis in the operating room. It is quite true that, when the majority of the public are fully enlightened, the surgeon will see lesions of the skin and oral cavity and the majority of subcutaneous tumors when they are so small that their complete excision is not only indicated but possible without any mutilation. The chief danger here will be a surgical mistake, the incomplete removal of an apparently innocent tumor. There is no necessity here for biopsy. If a proper local excision is done, no matter what the microscope reveals, that local operation should be sufficient. But when lesions of the skin, oral cavity and soft parts are extensive and their complete radical removal mutilating, then there must be biopsy to establish the exact pathology.

In tumors of the breast and disease of bone, for years the diagnosis could be made clinically, or from the gross appearances at exploration. But now in an increasing number of cases the breast tumor must be explored, and the gross pathology of this earlier stage is not sufficiently differentiated to allow a positive diagnosis. Immediate frozen sections are essential to indicate when the complete operation should be done. The same is true of the earlier stages of lesions of bone. Radiographs no longer make a positive differentiation between many of the benign and malignant diseases, for example, sclerosing osteomyelitis and sclerosing osteosarcoma. We must not only specialize in tissue diagnosis, but we must organize this department so it will function properly in as many operating rooms as possible in this country.

Then there is a final and most difficult question to consider. I doubt if it can be settled. What shall be done in those operating rooms, in which there is no technician to make the sections and none trained to interpret the microscopic picture? How can a piece be excised or a tumor removed, for example, from the breast, and this tissue sent to some laboratory for diagnosis without incurring the risk of the delay to the patient? I have discussed this point in my paper on biopsy.

Joseph Colt Bloodgood, M. D.
Surgical Pathological Laboratory,
Johns Hopkins Hospital.

PUBLIC HEALTH LEAGUES

WASHINGTON

(Olympia, March 1, 1927. Special to Northwest Medicine.)

A number of health measures have been presented before this session of the legislature, some of them being of great interest and vital. They range from educational tests for all healers to better plumbing and better sanitary life for oysters.

The Basic Science Bill and the Law Enforcement Bill are ones of great possibilities for good. Both of these measures have received wide endorsement and have polled heavy support in both houses.

PLUMBING

The standards of plumbing are to be raised under House Bill No. 251. Sanitation is the key note of this measure. It has come from the House Committee on Medicine, Dentistry and Pure Drugs with unanimous vote and at this writing is lodged in the Rules Committee. The Department of Health is taking a friendly interest in its passage.

OYSTERS AND FISH

The delectable oyster and many of their brethren are to be protected under another measure offered by the Department of Health. Inspection and certification of fish and shell fish grounds and premises are provided under the terms of a bill which has passed the Senate and is now in the House, with indications that it will pass in due course. Washington oysters and fish will be given a clean bill of health hereafter under the terms of S. B. No. 185, another great step to give added protection to the public in food stuffs.

TOURISTS' CAMPS

Striking against typhoid and other disease products of poorly managed tourists' camps, House Bill No. 252, also offered by the Department of Health, would require all such camps to pay into a special fund certain fees each year. From this fund would come adequate inspection and consequent sanitary arrangements in the direction of better health.

PHARMACY BILLS

The Washington State Druggists' Association has offered two bills affecting pharmacy. One gives to those who have practiced the profession for fifteen years the right to be examined for license. The other would limit the indiscriminate use of the terms "drugs," "drug store," "druggist," holding such names to the legitimate druggist and pharmacist. These measures have aroused considerable active support and may go through.

DENTAL LEGISLATION

The Washington State Dental Association did not repeat with their bill presented last year, which would have made the code of ethics of this professional group the law of the state. Last year's bill passed the Senate but was jammed in the House and did not reach final vote. However, a branch of the so-called advertising dentists are sponsoring a bill to give to the practical dentists the right to take two additional examinations. These dentists, involving a class of seven-year practitioners, have been allowed several tests heretofore and have failed to make the required grade. It is said that they have continued practicing despite the lack of a license, but desire now to qualify for additional tests. This bill, H. B. No. 235, has passed the House and is lodged in the Senate Committee on Medicine and Dentistry. It is doubtful that it will receive approval in the upper branch.

BASIC SCIENCE TRIUMPHS

The Basic Science Bill, which recently went through the Senate by a big vote, scored another triumph in the House last week when it was given approval by a vote of 69 to 27. This measure, which has become a state-wide issue of magnitude, has added friends to its support since its appearance at the last session. The favorable vote shows an increase of more than 25 per cent in the vote on the bill.

Shields of King pledged to the measure during his campaign for election, led the fight against it, being aided by Denman of Stevens county. He attacked what he called "the old line doctors" and paid a tribute to the "newer schools of healing." The Public Health League came in for attention during the course of his talk. Falknor of King and Dean McLean of Pierce spoke convincingly of the need of this legislation, stressing its fairness to all concerned and lauded it as one of the great health projects of recent years.

Dr. James A. Durrant of Snohomish county made a telling argument, when he stated that it appeared that many people were anxious to protect the lives of their cows and chickens by requiring adequate educational standards for veterinarians and by accepting the latest scientific procedures, but they apparently were not so strict when it came to protecting the lives of children.

(Since writing the above, Governor Hartley has signed the Basic Science Bill.)

Simple Method for Deriving Formula for Diabetic Diet. A simple method is described by William S. Collens and David H. Shelling, Brooklyn (*Journal A. M. A.*, Feb. 5, 1927), for the rapid calculation of a diabetic diet. All the data necessary are the total caloric requirements of the patient and the percentage of total calories to be given in the form of protein. The caloric requirements are easily obtained from standard tables or charts already described in the literature, such as the Du Bois surface area chart or the Boothby nomographic chart for the prediction of the basal heat production.

MEDICAL RESERVE CORPS

Camp Lewis, Washington,
November 22, 1926.

ENROLLMENT OF PHYSICIANS IN THE MEDICAL RESERVE CORPS

Your assistance in enrolling physicians in the Medical Reserve Corps for duty in the non-divisional Medical Reserve organized units is desired. Outside the four General Hospitals maintained throughout the United States by the Medical Department of the Regular Army, the utmost expansion of which could do little to meet the needs of hospital service in case of mobilization, the operation of the entire hospital service for the Army of the United States is reposed in the Medical Reserve Corps.

The medical service maintained by the National Guard is entirely divisional, and makes no provision whatever for medical care except that of brief emergency within the National Guard divisions themselves. Any member of the National Guard, on mobilization in National emergency, suffering any serious or protracted illness or injury must, therefore, look for definite hospital care and professional treatment outside the National Guard divisional area. Accordingly, the members of the National Guard have a direct personal and vital interest in the building up of the General, Evacuation, Surgical and Station Hospitals, the Hospital Centers, Laboratories, Hospital Trains and other relief establishments operated by the Medical Reserve Corps, and which will be the only institutions available for the care of sick and wounded members of the National Guard in any emergency, of whatever magnitude.

Although the work of organizing these hospital relief units, and of enrolling personnel for them in the Medical Reserve Corps has been progressing, it has nevertheless not yet reached a satisfactory status. Further effort and assistance are necessary. It could be helped tremendously, if the several members of the National Guard, looking to their own individual interests and welfare in emergency, would take active steps to enroll their own family physicians in the Medical Reserve Corps. Active aid to this end would ensure the completion of these hospital units in short order.

No conflict whatever between enrollments for the National Guard, Medical Department, and for the Medical Reserve Corps, need exist. The following are some of the main reasons:

(a) There are many doctors who do not wish to give the time, and accept the responsibilities incident to joining the National Guard, but who would be quite willing to accept a commission in the Medical Reserve Corps, as the latter requires no time or effort that the officer may not wish to give.

(b) National Guard Medical Service is service with troops, with its professional work necessarily limited to the emergency and temporary care of cases. There are many physicians in civil life who are interested only in the professional end of medical service, and in the direct care of the sick and disabled. Practically all the specialists come under this class, as operating surgeons, internists, genitourinary men, x-ray men, laboratory men, etc. The hospital service functioning in the non-divisional units of the Medical Reserve Corps furnishes exactly the kind of professional work that would appeal to these men in case of National emergency.

It appears from the foregoing that the National Guard would thus help create the hospital service necessary to itself from a class of physicians who, in time of peace, would not join the National Guard, and would otherwise have to be left out of its consideration.

A suitable procedure for the enrollment of such physicians as officers for the Medical Reserve Corps would seem to be as follows:

(a) Every member of the National Guard, enlisted men as well as officers, to inquire of his family physician if he is a member of the Medical Reserve Corps. If not, to invite him to enroll therein, with a view to his assignment to a hospital unit allocated to this State and vicinity, so that in case of National emergency the present relationship of physician and patient might be continued.

(b) Where the response by the family physician appears favorable, for the National Guard member to report the name and address of such physician to his company commander.

(c) The Company Officer receiving this information to promptly forward the name and address of the physician; and the name and address of the officer or enlisted men furnishing the above, to the Adjutant General of the State.

(d) The Adjutant General of the State will forward the information outlined in paragraph (c) above to the Headquarters Ninth Corps Area.

(e) On receipt of such information from this office, the office of the Corps Area Surgeon will undertake to carry out all further work and correspondence with the physician, furnishing the necessary blank forms and information, and conduct all matters necessary to the commissioning and assignment of the physician as an officer of the Medical Reserve Corps.

By direction of the Governor:

MAURICE THOMPSON,
Brigadier General, W.N.G.,
The Adjutant General.

DISTRIBUTION OF MEDICAL RESERVE OFFICERS

BY STATES

NINTH CORPS AREA,
JANUARY 31, 1927.

State	No. of physicians registered	No. of Medical Reserve Officers each State should furnish	Per cent of total required	No. of Medical Officers enrolled	Per cent enrolled of total required
California	7549	1243	60.7	865	69.58
Washington	1759	289	14.1	223	77.16
Oregon	1158	191	9.3	203	106.28
Montana	568	94	4.6	104	110.63
Utah	497	82	4.0	110	134.14
Idaho	452	75	3.6	48	64.0
Wyoming	263	43	2.1	42	97.67
Nevada	140	23	1.1	16	69.56
Alaska	60	10	0.5	2	20.0
Total	12443	2050	100	1613	78.68

The following changes of assignment status of members of the Reserve Corps are announced:

Capt. Logan G. Kimzey, Med-Res., Old National Bank Building, Pullman, Washington, is assigned to Headquarters Collecting Battalion, 349th Medical Regiment, 9th Corps, as Adjutant.

Capt. Thompson Coberth, Med-Res., The Dalles, Oregon, assigned to 425th Hospital Co., 349th Medical Regiment, IX Corps Troops, as Administrative Officer.

1st Lieut. Frank H. Douglass, Med-Res., Perkins Building, Tacoma, Washington, relieved from assignment to 363d Hospital Co., 321st Medical Regiment, and reassigned to General Hospital No. 141, Zone of the Interior, as Surgical Ward Officer.

1st Lieut. Clifford W. Whitaker, Med-Res., 323 North "I" St., Tacoma, Washington, assigned to General Hospital No. 141, Zone of the Interior, as Medical Ward Officer.

Capt. Paul G. Weisman, Med-Res., 807 Mill St., Colfax, Washington, assigned to Headquarters, 349th Medical Regiment, IX Corps Troops, as Adjutant.

1st Lieut. Wilmot C. Foster, Med-Res., University of Oregon Medical School, Portland, Oregon, assigned to General Hospital No. 46, Communication Zone, as Surgical Ward Officer.

Lieut. Col. Jesse W. Ingram, Med-Res., 920 Bonna Brae, Walla Walla, Washington, is attached to 83rd Evacuation Hospital, 3rd Army, as Chief of Surgical Service.

The following named Reserve Officers are relieved from assignment to the 96th Division:

Lt. Col. Francis M. Carroll, Med-Res., 743 Stimson Bldg., Seattle, Wash.

Major Elmer L. Crouch, Med-Res., U. S. Veterans' Hospital No. 59, Tacoma, Wash.

Major Herman S. Judd, Med-Res., 3716 North 26th St., Tacoma, Wash.

Major Harry C. Miller, Med-Res., 723-26 Medical & Dental Bldg., Seattle, Wash.

Major Orra E. Patterson, Med-Res., Westfir, Ore.

Major Frederick W. Wichman, Med-Res., Tenino, Washington.

* * *

BOOK REVIEWS

Edited by **KENELM WINSLOW, M.D.**

Principles of Human Physiology. By Ernest H. Starling, C. M. G., F. R. S., M. D., Sc. D., F. R. C. P. Late Professor of Physiology in the University College, London. Chapter on the Sense Organs by H. Hartridge, M. A., M. B. (Cantab.) Fourth Edition, 570 Illustrations. $8.50. Lea & Febiger, Philadelphia and New York, 1926.

A knowledge of physiology is as fundamental and essential for the practice of medicine as is that of anatomy for the performance of surgery. Five years have elapsed since the last edition of this standard work appeared. In that time so great has been the progress in all branches of physiology that alterations have been made in almost all the chapters, while some have been rewritten. In fact, even since this work has been concluded Mann has revolutionized the teachings of physiology by showing that bile pigment arises chiefly from destruction of blood pigment in the bone marrow and not in the liver, as stated in this and other authoritative works, and that the role of the liver is mainly that of eliminating bile pigment rather than in producing it.

The modern treatment of diseases of the liver accompanied with jaundice is a good illustration of the adaptation of physiologic knowledge to the treatment of disease. Thus, Starling states that the liver is the chief, if not the sole, source of blood sugar. In failure of liver function it is, therefore, necessary to supply glucose to the blood by intravenous injections to take the place of that which would normally be produced by conversion of glycogen stored in the healthy liver. It was this knowledge that enabled Mann to keep dogs alive by glucose injections after extirpation of the liver.

In the discussion of hormones Starling, like most physiologists, is very conservative and does not touch on many matters supposed to be ascertained, if we would believe the writers of disorders of internal secretions. He states that "our knowledge is limited to fragmentary facts and we must await further research before we can form any collected idea of the manner in which the different functions of the body are integrated by the interplay of chemical messengers, produced in the most diverse parts of the body." He offers no basis for the claims of polyglandular therapeutists.

He refrains from considering the effects of the internal secretions of the ovaries and testicles except in connection with puberty, menstruation and the climacteric. He notes that a corpus luteum in the rabbit and discharge of an ovum only occur as the result of copulation. With the formation of the corpus luteum there is growth of the mammary glands which ceases within fourteen days, if impregnation does not take place. After impregnation special glandular tissue is formed at the site of placental implantation in the uterus and a hormone is there produced which continues the growth of the mammary glands after the corpus luteum hormone ceases to act at the end of fourteen days. Starling's book is one of the most authoritative works on physiology and the present edition brings the subject well up-to-date. Winslow.

Diseases of Women. By Harry Sturgeon Crossen, M. D., F. A. C. S. Professor of Clinical Gynecology, Washington University Medical School, St. Louis, etc. Sixth Edition, Revised and Enlarged with 934 Engravings, Including one Color Plate. 1005 pp. $11.00. The C. V. Mosby Co., St. Louis, 1926.

This edition has given opportunity for extensive revision of previous volumes. The use of iodinized oil for x-ray visualization of the uterine and tubal cavities marks a distinct advance in gynecologic diagnosis, particularly with reference to determining the site of tubal occlusion causing sterility. In illustrating microscopic anatomy and pathology, actual photomicrographs have been largely adhered to. Dr. Crossen has adequately presented the complex study of gynecology, with its rapidly expanding accumulation of important clinical and pathologic data, within the limit of a single volume. Those desiring a complete treatise on the subject will find this edition complete and up-to-date in all details.

C. D. Shannon.

Symptoms and Diagnosis, Regional and General. By Wilfred M. Barton, A.M., M.D., F.A.C.P., Associate Professor of Medicine, Medical Department of Georgetown University, etc., and Wallace Yates, A.B., M.D., Fellow in Medicine, Mayo Foundation, etc. 851 pp., $10.00. D. Appleton and Co., New York and London. 1927.

This book is not designed for study but for a quick reference while the patient is being prepared for examination or while dressing after examination. It is for ready information on the doctor's desk or in the ward. It is presented on the basis that no doctor can carry all symptoms in his head and is intended to make him more observant of the characteristics of symptoms. The regional symptoms are grouped about various parts of the body. Thus under "Head" and the subdivision Headache are collected all imaginable symptoms of this condition, the characteristics and signs of each being mentioned. This is followed by a similar treatment of many abnormalities of the head and scalp. Under "Eye" are enumerated all diseases of the eyelids with a summary of the characteristic symptoms of each. Then follows similar treatment of the conjunctiva, eyeballs, etc. For the doctor who becomes rusty on the symptomatology of conditions which are not often encountered (and this includes every practicing physician) this book will prove a valuable aid in diagnosis and for the purpose of refreshing his memory on many forgotten details.

The Specialties in General Practice. Compiled by Francis W. Palfrey, M. D. Instructor in Medicine at Harvard University in Collaboration with 14 other teachers of Harvard Medical School. Octavo of 748 pages. Philadelphia and London: W. B. Saunders Company, 1927. Cloth $6.50 net.

Just as a wise and experienced medical man would write a medical treatise for an intelligent layman, using simple language and confining his attention to the more important subjects and to the essentials of these, so in this work the same general course is pursued in adapting the medical specialties to the needs of the general practitioner. The compiler has certainly been wonderfully successful in producing a book which appears to have been written by one man (with the aid of fourteen other teachers in the Harvard Medical School), so uniform is the simplicity of style and treatment throughout the book. The specialties described include dermatology, genitourinary surgery, gynecology, rhinology, laryngology, obstetrics, ophthalmology, orthopedic surgery, otology, pediatrics, psychiatry and surgery.

Definition, etiology, pathology, diagnosis, and especially treatment, are considered in regard to each disease without entering into any nonessentials. The text is more like an informal talk of a specialist to medical men with the idea of only bringing out the chief points in diagnosis, and the general principles and essentials in treatment, and it is all as practical, simple and valuable as it is readable. The choice of subjects for consideration in each specialty is peculiarly happy in being those most frequently seen by the general practitioner, where he still exists.

Choosing at random some of the topics under dermatology: Under eczema it is noted that the disease had better be called dermatitis except in those cases due to internal causes or predispositions. The diagnosis, classification and treatment are very clearly defined. It is pointed out that while urticaria is often due to specific sensitization, yet as a rule the etiology is not discoverable and treatment is pursued on the basis of suppositious intestinal toxemia, with the use of adrenalin and local sedative agents. Under ivy poison the poison ivy antigen or extract is shown to greatly shorten the disease and to be always indicated. Erythema nodosum is regarded as a specific infection. The constitutional symptoms are said to be slight but the reviewer has found it to be one of the most painful and distressing maladies in many cases, with long continued fever and prostration. It often seems to follow tonsillitis or mouth infections.

There has not come to our attention a more sane and sensible discourse on sexual hygiene than that to be found at the beginning of the section on genitourinary surgery. The particulars in sexual relations in married life are especially to be commended. The only omission is failure to point out the great harm resulting from continuous sexual excitement, common in long engagements and in less conventional sexual relations. In the diagnosis of renal calculus the danger of attributing every x-ray shadow in the kidney region to stone is emphasized. Even with all the symtoms of renal calculus and the presence of blood in the urine the x-ray shadow may be wholly misleading without the assistance of the pyelogram, wax tipped instruments, etc., together with the best expert advice.

We might go on this way indefinitely but it is sufficient to say that in this volume we have the best substitute for a postgraduate course in the subjects noted that is possible to attain by a book alone. It is a sort of postgraduate correspondence school course and most admirably given.

Boston is rather noted for its fads and fancies, as Eddyism, but fortunately it is also the home of some of the sanest and soundest medical opinion as voiced by Christian, Cushing, and now by Palfrey and his fourteen points, or rather collaborators.

Winslow.

The Medical Clinics of North America. (Issued serially, one number every other month. Volume X, Number V. (New York Clinic Number, Janurary, 1927.) Octavo of 327 pages with 31 illustrations. Per Clinic year, July, 1926, to May, 1927. Paper, $12.00; Cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company.

This volume begins with an interesting symposium on gastric and duodenal ulcer. Kaufmann discusses the medical aspect, Stewart x-ray findings, Fischer the surgical aspect, Rohdenburg the pathologic aspect. This is followed by a discussion by prominent surgeons and internists. Among the surgeons there is a difference of opinion as to whether treatment should be gastroenterostomy or gastric resection. Einhorn does not agree with Fischer that certain penetrating ulcers belong definitely to the surgeon, claiming that a large number of cases of distinct penetrating ulcer have been cured radiographically and symptomatically by medical measures. An extended discussion of anemia is presented by Held, in which are given the latest knowledge on the formation of the blood and its pathology. The different forms of anemia are presented with their treatment. Pernicious anemia is dealt with at length, in the treatment of which are mentioned the standard remedies of hydrochloric acid, arsenic, bone marrow and transfusion, but nothing is said regarding feeding of the patient with liver, kidney and brains, which seems to constitute the latest and most successful therapy in this disease. There are discussions of many other important medical disorders.

South America, Amplified to Include all of Latin America; The Vandyck Cruise. By Franklin M. Martin, C.M.G., D.S.M., LL.D., F.A.C.S., Director General American College of Surgeons, etc. Introduction by William J. Mayo, M.D., D.Sc., LL.D., F.R.C.S. (Eng., Edin., Ire.), D.S.M., Revised Edition. 435 pp. Fleming H. Revell Company. New York and Chicago. 1927.

The contents of this volume were gathered during visits to Latin-American countries by representatives of the American College of Surgeons during 1920-1-2-3-4-5. A large group of medical men participated in these journies and contributions are included from others than the author. There are interesting descriptions of all the countries of South America, with their leading cities, accompanied by abundant illustrations. There is a list of the Fellows of the College in all the Latin-American countries. Also is

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included a description of hospitals and the surgical work performed by the many able and brilliant surgeons in that part of the world. The volume concludes with a summary of facts covering historical, geographical, social and industrial matters. The reaction on anyone reading this volume will be a desire for personal inspection of the lands of our South American neighbors.

THE SURGICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month.) Volume VI, number VI. (New Jersey Number—December, 1926.) 318 pages; 93 illustrations and complete Index to Volume VI. Per Clinic year (February, 1926, to December, 1926.) Paper, $12.00; Cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company.

The contributions in this volume are by New Jersey surgeons, mostly from the city of Newark. They cover a wide range of surgical conditions, coming under the observation of every busy surgeon. Haussling presents an interesting discussion of "painful shoulders," illustrated by a number of cases. While the etiology is often obscure, he states that a large percentage are accompanied by a deposit of lime salts in the supraspinatus or bursitis or a combination of the two. He cautions against premature surgery in such cases, as the tendency is toward spontaneous recovery. He has found prompt relief in many cases from the injection of a 4 per cent solution of quinin and urea hydrochlorid into the depth of the painful muscle. Orton and Barkhorn discuss a variety of conditions in their bronchoscopic clinic. They emphasize the importance of peroral endoscopic methods in the diagnosis and treatment of surgical and medical conditions of the respiratory and food passages. Cases are cited of the removal of foreign bodies, and the diagnosis and treatment of malignant tumors in these passages. The dependence upon radiography is emphasized in all cases.

GENERAL INDEX VOLUME OF THE COLLECTED PAPERS OF THE MAYO CLINIC AND THE MAYO FOUNDATION. 1884 to 1925 inclusive. Octavo volume of 227 pages. Philadelphia and London: W. B. Saunders Company, 1926. Cloth, $5.00 net.

This index of collected papers will supply a long felt want to those who have followed the publication of the important papers issued from the Mayo Clinic. It covers all volumes published by the Mayo Clinic and the Mayo Foundation from the first issues to 1925. The volume is invaluable for ready reference to these publications.

NEPHROPEXY FOR RELIEF OF URETERAL KINKS ASSOCIATED WITH PTOSIS

A series of forty-eight nephropexies are reviewed by C. E. Burford, St. Louis (Journal A. M. A., Feb. 19, 1927). In three cases, nephrectomy was done for advanced pyonephrosis and nephropexy was done on the opposite side. In one case, nephropexy had first been done by a general surgeon; then nephrectomy had been performed on the same side, and later nephropexy on the opposite side. Burford repeated the nephropexy on the remaining kidney, and reports it as an instance of improvement. In two cases, bilateral nephropexy was done at different sittings; five cases were complicated by stones in the kidney or ureter which were removed, and the kidney was fixed with silk without troublesome infection. Seventeen persistent cases of pyelonephritis in ptosed kidneys, which had been treated by ordinary methods by pelvic lavage and urinary antiseptics with unsatisfactory results, were cured by fixation which established complete drainage of the pelvis. The success of the operation appears to depend not so much on the type of person or the degree of ptosis as, almost solely, on the correctness of the diagnosis as to whether or not the kidney and ureter are the cause of the symptoms. At least sixteen of Burford's cases of rightsided ptosis occurred in patients who had marked ptosis of the stomach and colon with strong adhesions between the lower pole and the colon, and the liver placed so low that it was necessary to use considerable force with the hand to separate adhesions between the ribs and the peritoneum covering the liver, to make a new bed for the kidney; but with one exception these kidneys have remained in their new positions and the distressing symptoms caused by the ptosis have disappeared.

PURPURIC VESICULOBULLOUS DERMATITIS

Two cases of purpuric vesiculobullous dermatitis are reported by Chester N. Frazier, Peking, China (Journal A. M. A., Feb. 19, 1927), which followed the intravenous injection of sodium thiosulphate. These cases were primarily cases of acute arsphenamine dermatitis, but the response to sodium thiosulphate treatment has not conformed to that previously observed. Soon after the administration of the sodium thiosulphate, there developed an acute febrile reaction accompanied by intense pruritus and the rapid evolution of a purpuric vesiculobullous eruption. From the study of the course of the arsphenamine dermatitis preceding the administration of sodium thiosulphate, and the suddenness and dissimilarity of the reaction and dermatitis observed subsequent to its administration, the causative relationship of the sodium thiosulphate to the purpuric vesiculobullous dermatitis seemed to be established. In both instances the arsphenamine dermatitis had been present for some time—in the first case nine days, in the second four weeks—before the use of sodium thiosulphate, during which time there had been remarkable variation neither in the character of the cutaneous lesions nor in the patients' general condition. In the latter case, however, the dermatitis had been aggravated by the local application of a sulphur and salicylic acid ointment. The arsphenamine dermatitis improved simultaneously with the development of the hemorrhagic and bullous lesions in the second case reported. The first patient received two injections, the first of 0.4 Gm. and the second of 0.5 Gm., at an interval of thirty-two hours. The second patient received a single injection of 0.2 Gm. of the salt. Chemically pure sodium thiosulphate was dissolved in freshly double distilled water,

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ORIGINAL CONTRIBUTIONS

CALCIUM METABOLISM AND THE PARATHYROID GLANDS*

C. F. DAVIDSON, M.D.
SEATTLE, WASH.

A review of current medical literature reveals a multiplicity of conditions for which calcium is being prescribed. Such symptoms as premature cardiac contractions, paroxysmal tachycardia and even auricular fibrillation, cramps and pains in tetany, anaphylactic shock, nervous hyperacidity, vagatonic diarrhea, membranous enterites, chronic diarrhea following dysentery, premenstrual pains not due to local pathologic conditions, urticaria, chilblains, night sweats, asthma, hay fever, acute rhinitis, serum disease and certain edemas are said to respond to calcium administration. In dental work you see evidence of disturbance in calcium metabolism in delayed dentition, in malformed teeth and in excessive deterioration and decay, such as is at times found in pregnancy and in osteomalacia.

A perusal of the texts on pharmacology and the action of drugs gives one no information regarding the action of the calcium ion. The consensus of opinion expressed in such texts is that calcium salts owe their use not to the calcium ion but to the other part of the molecule, the anion. In one such text the following statement is made, "As a matter of fact calcium has few important effects of its own and is seldom prescribed for any action which it might have on the living tissues." Previous to the isolation and exhibition of the active principle of the parathyroid glands any action that calcium salts might have had in allaying any of the above mentioned symptoms would have been ascribed to the antacid action of the particular calcium salt administered. With the recent advances in our knowledge of the function of the parathyroid glands calcium has acquired an increased interest.

The parathyroids in the human, usually four in number, are situated on the posterior surface of the thyroid lobes. They are designated as superior and inferior. The superior pair is located on the mesial surface of the thyroid lobes about the juncture of the upper and middle thirds. They are more constant in position. The inferior pair is also usually on the posterior surface but more caudad. Accessory parathyroids may be present. They are situated in the thorax near to or embedded in the thymus gland. Variations in the positions of the glands in experimental animals led to contradictory results in some of the earlier work. In the dog and cat the glands are closely attached to the thyroid and are easily removed in thyroidectomy. In the rabbit or rat the inferior pair are not so closely associated and are prone to escape removal in thyroidectomy. In certain instances the designation external and internal is used to refer to the superior and inferior respectively, indicating that the former are outside the thyroid gland while the latter are more or less imbedded in it.

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* Read before King County Medical Society, Seattle, Wash., Dec. 20, 1926.

The superior parathyroids were first discovered by Sandstrom in 1880. The discussion of his demonstration of these glands in the human, dog, cat, rabbit, ox and horse did not attract particular attention until after Gley in 1891 rediscovered them. He first pointed out that thyroidectomy involved also parathyroidectomy. The inferior parathyroids were first discovered by Kohn in 1895. He believed they were anatomically separate and functionally distinct from the thyroid. The earliest records of experiments on animals involving the parathyroids are those of Raynard who in 1835 showed that thyroidectomy in dogs was frequently followed by death within a few days. In 1884 Schiff reported that thyroidectomy in the dog and cat almost invariably resulted in death, while in rats and rabbits it was usually without symptoms. In 1900 Vassale and Generali removed the parathyroids without interfering with the function of the thyroid. They found such procedure usually followed by muscular tremor or spasms, psychical depression, rigid or spastic gait, gastrointestinal upset, tachycardia, weakness and death. They advanced the theory that the glands functioned normally as a detoxifying agent. They ascribed the symptoms to poisoning, incident to the lack of function of the glands.

This theory seemed to fit in well with many observations. Parathyroidectomy is less serious and runs a milder course in old than in young dogs. It seems to be more severe in dogs that eat heavily, especially of meat, and less severe with fasting. Bleeding and transfusion temporarily relieve the symptoms. The finding of guanidine in urine of parathyroidectomized dogs and the fact that guanidine and methyl guanidine produce symptoms not dissimilar to those met with in tetany were used in the further elaboration of the toxin theory. Paton concluded that the parathyroids controlled the tone of the muscles by regulating metabolism, i.e., the production and destruction of guanidine. Such an explanation took no cognizance of the part calcium was believed to play in tetany following parathyroidectomy.

In 1909 MacCallum and Voegthn demonstrated a lowered calcium content in the blood stream in parathyroidectomized dogs. They further demonstrated that calcium administered orally, subcutaneously or intravenously relieved the symptoms. They concluded that the function of the parathyroids is to regulate calcium metabolism and that all symptoms following parathyroidectomy are due to calcium deficiency. In 1912, by causing blood from a dog in tetany to flow through the leg vessels of a normal dog, MacCallum demonstrated hyperexcitability of the nerves of the leg identical with that found in tetany. Later it was further demonstrated that the hyperexcitability of the nerves is due to diminished calcium in the blood, that calcium therapy would keep parathyroidectomized dogs free from symptoms and that parathyroid glands normally controlled the calcium content of the blood.

Various workers had from time to time reported some satisfactory results in the treatment of tetany with parathyroid products, but no process for isolating an active principle had been perfected. Constant results could not be secured. In 1924 MacCallum, one of the strongest proponents of the calcium parathyroid factor in tetany, wrote: "Extracts of parathyroid glands have naturally been tried both experimentally and clinically throughout many years and some of them seem to have some effect in restoring calcium balance and the normal excitability of nerves, but at best it is a slight and questionable effect and less satisfactory in experimental animals than in the tetany of adults, from which it may probably be assumed that the psychic effect of any treatment plays a part here."

Then Collip in 1924 reported the isolation and exhibition of an active principle that altered blood calcium, not only in cases of tetany bringing it back to normal with relief of symptoms but also in normal animals. In parathyroidectomized as well as in normal animals this product will cause a rise in blood calcium that can be pushed to a fatal issue. The product is isolated by hydrolysis and precipitation. It gives reactions that indicate it is a protein-like substance. It has been placed on the market in form comparable to insulin. One one-hundredth of the amount that is necessary for raising the blood calcium of a dog weighing 20 kilos 5 mg. per 100 c.c. has been designated as a unit.

The physiologic action of the parathyroid hormone is the regulation of calcium metabolism and the maintenance of a definite level of calcium in the circulating blood. The demonstration of it is best observed by the administration of repeated injections at short intervals. Certain animals, for example the rabbit, are but slightly affected. Dogs respond in a characteristic manner. After a single injection the blood calcium gradually rises for an average of fifteen or eighteen hours and then gradually falls to the previous level. The rise is so nearly directly proportional to the dose that standardization is accomplished by taking the average of a large number of reactions.

Blood calcium normally ranges from 9 to 12 mg. per 100 c.c. of serum. Symptoms occur when it falls appreciably and also when it is appreciably increased. A dose of parathyroid hormone sufficient to cause a rise to 15 mg. per 100 c.c. may produce only vomiting. Even 20 mg. per 100 c.c. may be recovered from, if it is not maintained too long. Repeated injection of moderate doses at intervals of a few hours gives a fairly constant result. The first symptoms are vomiting and diarrhea. Otherwise there are no symptoms except evidence of uneasiness until the blood calcium has reached about 20 mg. per 100 c.c. It may remain at this point for some hours with occasional attacks of vomiting and diarrhea and diminishing strength. Then the blood calcium starts to fall. The symptoms become more severe. There may be respiratory distress. There is vomiting and passing of blood and collapse. Death usually follows in a few hours. In the terminal period blood phosphorous rises. The blood volume decreases and the blood thickens. Coagulation time is decreased. The kidney practically ceases to function about the time that the serum calcium reaches its peak. Coincident with this abrupt decrease in kidney function blood phosphorous, blood urea and nonprotein nitrogen start to ascend. The postmortem examination of a dog killed by an overdose of parathyroid, as well as of a dog killed by an overdose of calcium and phosphorous, shows congestion about the gastric and intestinal glands both in arterial and venous capillaries with diapedesis.

Collip failed to produce hypercalcemia in normal rabbits. The rabbit reacts differently from the dog. But in parathyroidectomized rabbits, in whom tetany of a severe type was prone to develop, he found a marked rise in the morganic phosphorous with the terminal fall of the serum calcium. The fact that normal rabbits are immune to an overdose of parathyroid hormone and that parathyroidectomized rabbits do not respond well to the administration of either parathyroid hormone or calcium after the onset of tetany leads Collip to conclude that hyporphosphotemia as well as hypocalcemia is an important factor in the terminal picture in tetany. Even though the administration of the hormone is begun immediately after parathyroidectomy, the rabbits dying early show a marked increase of blood phosphorous.

The application of this information to clinical medicine is intensely interesting. Clinically tetany has been known for a long time. Clark in England in 1815, in his "Commentaries on Some of the Most Important Diseases of Children," discussed spasm of the glottis and called attention to the rigidity of the extremities that complicates this affection. In the next year Kellie of Leeds presented a paper, entitled "Note upon the Swelling of the Back of the Hand and of the Foot and upon a Spasmodic Affection of the Thumbs and Toes which Frequently Accompanies it." Steinheim in Germany described it in 1830 as a "rare form of acute articular rheumatism." Corvisart gave it the name tetany in 1852. Erb in 1874 studied the electrical hyperexcitability of the motor nerves and associated his name with that phenomenon. Chvostek in 1874 described the mechanical hyperexcitability of the nerves and associated his name with the facial phenomenon. Trousseau had earlier described the production of the spasm in the hand by the application of a tourniquet to the arm. Hoffman in 1888 described the increased excitability of the sensory nerves. About this time tetany was recognized as an epidemic disease in Vienna. Weiss, in Billroth's clinic, observed its occasional appearance in patients after operations for goiter. With the discovery of the parathyroids already mentioned in 1880, 1891 and 1895 and with the concept of internal secretion voiced by Pasteur in 1870, the stage was set for interesting correlations.

Tetany is defined as a clinical syndrome, characterized by a peculiar hyperexcitability of the nervous system, motor, sensory and autonomic, and in manifest cases also by spontaneous attacks of peculiar tonic spasms, involving certain groups of muscles or even the whole body musculature. On clinical grounds it has been discussed under various headings, as idiopathic tetany, gastric tetany, tetany due to stenosis of the duodenum, tetany in colonic dilatation, tetany in association with infectious diseases, tetany in association with intoxications, tetany associated with menstruation, pregnancy and lactation, tetany after operation for goiter and tetany in children.

The symptoms of all forms of tetany are referable to the hyperexcitability of the nervous system. The "obstetric hand," produced by applying a tourniquet to the arm or by pressure on the nerve in the bicepital groove, Trousseau's phenomenon, is one classical symptom. Chvostek's sign, contraction of the muscles supplied by the facial nerve by percussion over the nerve, is another. Alteration in electrical excitability of motor nerves, KCC contraction with a current below 15 miliamperes, is a positive test. This is known as Erb's sign. These are three outstanding pictures of hyperexcitability of motor nerves. The latter, carefully worked out with the ACC and KCC reactions, forms the most accurate diagnostic procedure. It is well to emphasize the fact that individual muscles or groups of muscles may give the suggestion that may lead to a suspicion of this disturbance. It may be smooth muscles, innervated by the autonomic nervous system, such as cilary, intestinal muscles or the sphincter or detrusor of the urinary bladder. Or the suggestion may come from a sensory disturbance.

Recently I saw in consultation a case that consulted the physician on account of a disturbance, beginning as a "pin and needle sensation" in the legs. This grew worse and when I saw her general fibrillary twitchings in the legs were also present. A postoperative case seen recently first complained of pins and needles sensation in finger tips and in face.

Trophic disturbances are prone to occur in chronic tetany. The teeth, nails, hair and crystalline lens often manifest defective conditions. The teeth often show enamel defects. Cases have been reported in which the hair has fallen out. The nails may become grooved or even fall out. The crystalline lens is prone to develop cataract in tetany. The tendency to cataract formation in chronic tetany serves as an interesting illustration of the disturbed calcium metabolism.

It has been shown that there is a retention of phosphorous as well as calcium, following parathyroidectomy. Only after a period varying from ten to fifteen days does the excretion of these approach the preoperative level. It has been shown that there is no increase in the total phosphorous of the blood. We have already discussed the decreased blood calcium. Greenwald has shown that the retention of calcium is in excess of that needed to form $Ca_3(Po_4)_2$ with the available phosphorous. Just how and where this excess of calcium is deposited has not been made clear. But it is not available for normal bone or tooth formation. The cloudiness in the crystalline lens may well be due to calcium phosphate. Greenwald has shown that the administration of potent parathyroid extract is followed by an increased excretion of calcium and phosphorous. Improvement in the patients with chronic tetany often is accompanied by the disappearance of the cataracts.

The distribution of the calcium in the organism is still an open problem. It has long been known that the plasma and serum contain calcium in excess of the amount that an aqueous solution of the same reaction and phosphate content could keep in solution. Serum acts as a supersaturated solution of calcium phosphate. In attempting to explain the disturbance in calcium metabolism in tetany, Greenwald has assumed (1) that the amount of ionic calcium in the blood is always small, except after the administration of large amounts of calcium salts. (2) This ionic calcium is in equilibrium, at the bones, etc., with solid $Ca_3(Po_4)_2$, and in the circulating blood with at least one organic compound of calcium. The compound of significance in relation to the function of the parathyroids resembles calcium citrate in certain of its properties. It liberates very little of its calcium as such and is not readily precipitated by oxalate or phosphate. (3) An equilibrium between these two forms of calcium. The precise distribution between these two forms, solid $Ca_3(Po_4)_2$ and an organic compound, is determined by the concentration of calcium, of the organic constituent, of phosphate, of carbonate or other ions tending to precipitate calcium, hydrogen ion, etc.

Assuming that the parathyroid hormone is the organic substance which he calls X, or at least necessary to its preparation, he explains the known facts as follows. Administration of parathyroid hormone to a normal dog would displace the equilibrium Cax-Ca″ plus x to the left. The decreased concentration of Ca in the blood displaces the equilibrium $Ca'' \; Po_4 = Ca_3(Po_4)_2$ at the bones also to the left. The concentrations of calcium and phosphate in the plasma would be increased. It is interesting to note that hypertrophy or hyperplasia of the parathyroids has been reported in osteomalacia and in rats on a diet deficient in calcium. Removal of the parathyroids leads to a diminution in the amount of X. Consequently the equilibrium Ca″ — X is displaced to the right. So is the equilibrium $Ca'' \; Po_4 = Ca_3(Po_4)_2$. The concentration of calcium in the plasma falls and the concentration of phosphate would be similarly decreased, if it were not maintained by that derived from the food and from the endogenous metabolism. The excretion of both Ca and phosphorous decreases. At a certain level it is possible that other equilibria are upset and that Ca escapes from other tissues. He assumes that it is the loss of Ca from tissues rather than the change in the blood itself that is the cause of tetany.

Clinical observations, such as the development of tetany in estrus, pregnancy and lactation, the development of tetany in healing rickets, the frequent occurrence of tetany in children treated with ultra violet radiation, etc., can be understood in terms of this theory. However, whether the latter two phenomena depend on changes in calcium or in phosphorous are still undetermined. Clinical symptoms, such as those mentioned in the first paragraph of this paper for which the literature reports calcium as being prescribed, have not been proved to be in the same group as the observations mentioned above. But consideration of the list will certainly suggest that these symptoms are almost without exception associated with an unusual excitability of nerves. If this unusual excitability could be shown to be due to a variation in calcium metabolism, the administration of Ca would be the logical method of treatment. It is most improbable that calcium deficiency can be demonstrated in any appreciable portion of such cases. But wherever the administration of calcium gives relief it is only fair to question the modus operandi and to think of parathyroid deficiency as a possible causative factor.

The administration of calcium orally or intravenously is effectual in most cases of tetany, unless the blood calcium has fallen far below normal. Even in cases where the parathyroid function is entirely lacking it is often possible to force calcium medication sufficiently to prevent symptoms of tetany. It is often impossible, however, to get the blood calcium back to its normal level. Abatement in administration is promptly followed by symptoms. Calcium administered intravenously is available as blood stream calcium. Administered orally, it may or may not be absorbed. Recent work indicates that absorption from the intestine is promoted by the inclusion of lactose in the diet. Administration of parathyroid must be accompanied by the administration of sufficient calcium, or body tissues are apt to be robbed of the calcium. Parathyroid hormone should be administered only with a clear understanding that it may tend to an excretion of calcium.

To dentists the most interesting symptoms in this connection are those incident to delayed dentition, malformation of teeth, maxilla and mandible and excessive deterioration and decay. Delayed dentition means more than disturbance in calcium metabolism. More often perhaps than not, thyroid deficiency is at work in delayed dentition. The thyroid hormone, stimulates cell activity. Deficiency in this hormone resulting in decreased cell activity is often manifest in delayed dentition. Administratio nof thyroid gland or thyroxin often promptly corrects this trouble. Any other factor or factors diminishing cell metabolism may result in altered tooth growth. Congenital lues is prone to influence tooth growth. We know nothing about the biochemistry of this alteration. It has been stated that, if we knew all about syphilis, we would not need to know more about medicine. If we knew all about the manifestations of syphilis, we would know much more biochemistry than we know today.

Other intoxications, such as those causing parallel corrugations on the forming teeth, I think may fairly be assumed to cause the disturbance by decreasing the efficiency of the ductless glands. The study of gross and microscopic pathology has been more intensively directed at heart, blood vessels and kidneys and it seems to me too little towards the endocrine glands. The endocrine glands, the automatic regulators of our autonomic system, may fairly be considered among the most highly specialized tissues in the body. It seems only fair to assume that they might be as susceptible, if not more so, to toxic effects than heart, blood vessels and kidneys.

The endocrine glands, so-called, are those glands whose products are not poured out through a duct, as is the salivary secretion, but are picked up by the blood stream. The list includes the pituitary, thyroid, parathyroid, adrenal glands, islands of Langerhans, the ovaries and testicles. All are aware of the fact that adrenalin and pituitrin are widely used in practice. All are aware of the effect of thyroxin and of effects following the thyroid gland operation. The isolation and exhibition of insulin and parathyroid hormone are the latest additions to the work in this line. Time will certainly reveal more about the function of the gonads and the cortex of the adrenal.

I have transgressed here because of the close interrelation of the products of this system of glands. It is largely through them that the autonomic nerves are controlled. The maintenance of a nice balance is necessary for the preservation of a normal nutrition and growth. The thyroid controls the rate of metabolism; the pituitary has much to do with rate of growth and maintenance of what we are pleased to call normal proportions. Likewise the gonads are known to influence rate of growth and development and maintenance of certain so-called sex characteristics. The islands of Langerhans are active in carbohydrate metabolism and failure to function normally gives diabetes.

But to return to our calcium problem. The presence and normal functioning of parathyroids is not sufficient to insure proper and adequate bone and tooth formation. We must have an harmonious cooperation of the ductless glands. We must also have vitamines and sunshine or exposure to light of certain wave length. Cod liver oil is effectual in furnishing vitamine D. What the vitamine is we do not know. We do know there is an intimate relation between it and the ultraviolet rays. We do know that certain materials can be made to contain it by exposure to these rays. It has been suggested that the effect of light waves is a change in the configuration of atoms in molecules. Recent experimental work reported from the University of Pennsylvania is interpreted to indicate that cod liver oil given before parathyroidectomy will prevent the development of tetany, though it does not alter blood calcium. Studies by Telfer from the University of Glasgow are interpreted to indicate that the effect of cod liver oil in rickets is incident to its influence on retention of mineral elements. These studies report that in progressive rickets calcium is excreted through the bowel as insoluble calcium phosphate. Under this condition there is diminished phosphate in the urine. In healing rickets he believes calcium is attached to a fatty acid radicle and absorbed. An increased amount of phosphorous is also absorbed and the urine shows a proportionately higher content of phosphate than in the preceding condition. He suggests that the prophylactic and curative effects of cod liver oil are dependent on altered conditions of the gastrointestinal tract which permit free absorption of the mineral elements. There is some evidence to suggest that this may be due to an increased hydrogen ion concentration of the intestinal contents. Further study only can solve the problem.

Adults need roughly one gram per day of Ca expressed as CaO; children need twice that amount. Calcium is found in milk in greater concentration than in most foods. It is especially rich in legumes, peas and lima beans and in eggs. But that in milk is reported as being more easily utilized. Milk contains 0.1 per cent of CaO; 500 c.c. or a pint of milk a day would give the necessary calcium. Meat and vegetables other than legumes and egg yolks are poor in this mineral. This is an additional reason for advising the use of milk by adults as well as by children. An excess of calcium does no harm. It is well for a growing child to have at least a quart of milk a day. And even then there may be a deficiency of Ca, if the cows have not been fed on legumes, clover, alfalfa, beans, etc.

SUMMARY

1. Calcium is being prescribed for various symptoms.
2. It has not been supposed to act as an antacid through the anion.
3. The isolation and exhibition of parathyroid hormone has demonstrated that the calcium ion or cation is of great importance in our internal economy.
4. Tetany illustrates the effect of diminished calcium.
5. Greenwald's theory of the distribution of calcium is outlined.
6. The influence of other endocrine disturbances on calcium metabolism is suggested.
7. The necessity of vitamine D or ultraviolet light is emphasized.
8. The amount of CaO needed is indicated and foods offering it most advantageously are mentioned.

SOME SIGNS OF ENDOCRINE DYSTROPHIES

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The field of endocrinology being new and the scientific basis vague, to say nothing of the clinical syndromes, it has been thought useful to tabulate the outstanding signs of endocrine disturbances. It would seem that such an outline might hold a similar place in promoting more careful work in this realm of medicine, as in the past the signs and symptoms of heart disease have been an aid in developing cardiology. We are not offering this tabulation as a complete list of such signs, for undoubtedly they are far from all being known, but because it seems as a likely starting place for all interested in this puzzling phase of diagnosis.

Unmistakable signs of endocrine disfunction may be placed under six primary heads:

1. General appearance of the patient.
2. Skin and appendages
   a. hair.
   b. nails
   c. teeth
3. Body fat
4. Disproportion in growth
5. Retardation in development
6. Facies.

The endocrinologist must at all times keep a clear mental picture of the normal before him, as it is the deviation from this normal in appearance that is going to be his first clue toward a correct diagnosis. For brevity the descriptions of the normal will at all times be omitted. The normal appearing individual may be classified as occurring under the following:

A. Short individual (dwarf)
   1. Hypothyroidism preadolescent (cretin)
   2. Hypopituitaryism preadolescent (Lorain-Levi Syndrome and Fröhlich Syndrome)
   3. Status thymicolymphaticus (some cases)
B. Tall individual (giant)
   1. Hyperpituitaryism preadolescent (gigantism)
   2. Hyperfunction of the interrenal system
   3. Hypergonadism
   4. Hypogonadism (eunuch) (some cases)
   5. Pinealism
   6. Status thymicolymphaticus (some cases)
C. Thin individual (undernourished)
   1. Hyperthyroidism (Grave's or Basedow's disease)
   2. Hyperfunction of the interrenal system
   3. Diabetes mellitus (late)
D. Fat individual (adipose)
   1. Hypothyroidism (cretin or myxedema)
   2. Hypopituitarism
   3. Hyperfunction of the interrenal system early
   4. Hypogonadism (eunuchs and eunuchoids)

E. Over alert mentality (agitated)
  1. Hyperthyroidism (Grave's or Basedow's disease)
  2. Hyperfunction of the interrenal system
  3. Hypogonadism in females (under function of ovaries)

F. Drowsy, dull or confused mentality (stupid)
  1. Hypothyroidism (cretin or myxedema)
  2. Hypoparathyroidism (tetany) these cases are nervous but confused
  3. Hyperpituitarism (giantism or acromeglia)
  4. Hypopituitarism (Frolich syndrome, etc.)
  5. Pineal tumors
  6. Hypofunction adrenals (Addison's disease)
  7. Hypogonadism (males) (eunuchs)
  4. Hypopituitarism (Frölich syndrome, etc.) (enduring)
  1. Hyperfunction of the interrenal system
  2. Pineal tumors

H. Weak, asthenic, fatiguable individual (languid)
  1. Hypopituitarism
  2. Hypoadrenalism (Addison's disease)
  3. Hypofunction of the chromaffin system
  4. Status thymicolymphaticus.

The attention may next be turned toward the condition of the patient's skin. The endocrinologist is concerned with the texture, thickness, wrinkling, moisture and color. Not only should one examine the skin which is exposed to the elements but a careful inspection of the skin covering the back, abdomen, axilla and thighs should be made. The following outline includes the outstanding variation from normal for which one should look:

a. Thin transparent, soft, moist, mottled skin of hyperthyroidism (Grave's or Basedow's).
b. Thick, creased, rough, scaly, dry skin of hypothyroidism (cretin or myxedema).
c. Cutaneous pallor, dermagraphia and erythema of hypoparathyroidism (tetany).
d. Thick, dry, sallow, wrinkled skin of hyperpituitarism (gigantism or acromegalia).
e. Pale, thin, soft skin of hypopituitarism (Frölich syndrome, etc.).
f. Dirty yellow to brownish pigmentation in hypoadrenalism and hypofunction of the chromaffin system (Addison's).
g. Brownish pigmentation, general or patchy in hyperfunction of the interrenal system.
h. Pale, sallow, thin, finely wrinkled skin of hypogonadism in the male (eunuch).
i. Delicate, thin, pallor of the skin in status thymicolymphaticus.
j. Brownish blotches of skin in hypogonadism of the female (under function of the ovary).
k. Dry, pruritic skin of diabetes mellitus.
l. Thin, shiny, dry, atonic, finely wrinkled skin of senility (hypofunction of all ductless glands).

The condition of the hair and its distribution is often of the utmost importance in searching for ductless gland disorders. The texture of the normal hair will not be discussed but a remark concerning hair distribution is offered. In the child the scalp has a round margin above the forehead. The beard and body hair do not start until adolescence. At this time the male develops indentations in the forehead margin about the temples and this usually progresses some with age. The pubic hair growth forms roughly the outline of a diamond with one point toward the umbilicus. The chest, axillary and other body hair begin their growth.

The female also starts a growth of body hair at the time of adolescence but it is different in its distribution. There is normally no beard nor body hair except the axillary and pubic distribution. The pubic hair is distributed following the shape of a triangle with the tip pointed toward the mons pubis, leaving a distinct straight margin on the lower abdomen. The scalp hair in the female tends to remain without indentations as in the male. With these secondary sex characteristics concerning hair distribution in mind, the following is suggested as a classification which may cause deviation from the normal:

a. Smooth, silky, oily hair of hyperthyroidism (Grave's or Basedow's).
b. Scant, brittle, dry, lusterless hair of hyperthyroidism (cretin or myxedema).
c. Scant, short hair of hypoparathyroidism (tetany).
d. Heavy, coarse hair, beard and eyebrows of hyperpituitarism (gigantism and acromegalia).
e. Hypotrichosis-heterosexual of hypopituitarism (Frölich).
f. Precocious growth of hair in pineal tumors.
g. Precocious growth, heterosexual in hyperfunction of the interrenal system.
h. Early growth of body hair in hypergonadism.
i. Lack of secondary sexual hair growth in hypogonadism of the female (hypoovarian).
j. Heterosexual or reversion to the female type in hypogonadism of males (eunuch and eunuchoids).
k. Heterosexual in status thymicolymphaticus.

The nails should be carefully examined in any routine physical examination but often these are apparently missed. Many suggestions of systemic trouble can there be ascertained and particularly endocrine irregularities. The following disturbances in the appearance of the nails are suggestive of ductless gland disturbances as tabulated:

a. Brittle, horizontally ridged, thin nail of hypothyroidism (cretin and myxedema).
b. Fragile, both horizontal and vertical ridged nail of hypoparathyroidism (tetany).
c. Triangular and shallow nail of the hypopitutary.
d. Matrix irregularly separated from the nail with ridging in hyperthyroidism.

Like nails the teeth offer the clues to many diagnoses and should be regularly inspected. One interested in internal secretory disorders may note the following irregularities in the tabulated disturbances:

a. Enamel defects in hypoparathyroidism (tetany).
b. Encisor gap in hyperpituitarism (more pronounced in acromegalia).
c. Large incisors in hypopituitarism (Frölichs, etc.)
d. Late dentation in hypothyroidism (cretin).
e. Enlarged midincisors in status thymicolymphaticus.
f. Dental caries in diabetes mellitus.

The importance of excess weight in diagnosis lies not so much in the weight as in its distribution. In considering the obese person we must first decide whether this fat is of exogenous origin (overeating) or of endogenous origin (inability to properly burn the food eaten). Undoubtedly if the patient comes is the latter class other endocrine signs will be present. We believe that the endogenous group are all endocrine disturbances and also that this group usually show a tendency for peculiar distribution of their fat. This phase of the subject must necessarily take in a number of the so-called adipose dystrophies, about which little is known. However, it is possible to offer a few generalities in some of the more outstanding and better known syndromes. The following seem to be clear cut ductless gland disorders:

a. The rubbery fat pads about the neck and the dorsum of the hands and feet, together with general adiposity as seen in hypothyroidism.
b. The excess deposits noted about the trunk (mammary region, abdomen and hips), and the upper arm and thigh in hypopituitarism.
c. The general increase which is quite uniformly distributed in hypogonadism.
d. The quite constant increase of fat noted in the early hyperfunction of the interrenal system and also in pineal tumors.

In addition, it is interesting to speculate on the following fatty disorders which may have an endocrine base:

a. Nodular, circumscribed lipomatosis.
b. Diffuse, symmetrical lipomatosis.
c. Adiposis dolorosa (Dercum's disease).
d. Adiposita cerebralis.
e. Lipodystrophia progressive.
f. Lipomatosis of the pendolypectrophic form of muscular dystrophy (*).

The fifth primary "head disproportion in growth" is to include the presence of abnormally large hands, feet, mandibles, legs, etc., and also their opposites as compared with the body as a hole. Thus the following disturbances are tabulated:

a. Length of the lower extremities as compared to the trunk in pituitary disorders.
b. The large hands, feet and jaw in acromegalia.
c. The "petit hand," as in hypopituitarism.
d. The spade hand, short neck, stub fingers and often short legs of hypothyroidism.
e. The long arms, long legs, and small ear of hypogonadism in males.
f. The slender fingers, usually tapering in hyperthyroidism.

Retardation in development seems to be the first information which can be obtained which points to endocrine dystrophies. It is during the infancy and childhood that most can be done therapeutically for these cases, if only a diagnosis may be made. Here again, as in all endocrine study, the final work has not come forth but as a basis the following four points can be used as indicative of disturbance. It appears most likely that the thyroid and pituitary are the glands to which these retardations point.

a. Late dentition.
b. Late talking.
c. Late walking.
d. Backward mentality.

In many specialties of medicine, highly technical apparatus is a necessity for careful work, and the general practitioner finds himself at loss on some of the more detailed studies in these lines. However, though the x-ray findings, blood chemistry, basal metabolism and other laboratory studies are aids to the endocrinologist, the purpose of this outline is to bring out the fact that much can be accomplished in this field of medicine by using simple clinical observation. We believe nothing shows this more than to tabulate the endocrine syndromes that can be diagnosed by the practitioner's first glance at the patient, that is, the characteristic facies that many of these people have.

a. Grave's disease with its characteristic exophthalmia.
b. Myxedema with its characteristic waxy skin, bags beneath the eyes, highly colored malar prominences on a yellowish sallow cheek and dull expression.
c. Cretinism with the stupid face, protruding tongue and drooping head.
d. Acromegalia with the protruding jaw, heavy eyebrows, thick hips and coarse skin.
e. Tetany with its delicate skin, anxious and alert expression, bright eyes and twitching muscles.
f. Eunuchism with its dull expression, small features, lack of beard and soft skin.

The authors wish to acknowledge many descriptive points, tabulated in this paper, which are present in all current text books on this subject.

THE ROLE OF ENDOCRINES IN NERVOUS DISEASES*

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The information which I wish to give is the result of a series of observations from contact with several hundred cases of psychoneuroses in all stages and degrees of progress. I wish to impress you with the value of some recent findings in arriving at a better understanding of these cases, together with the corroboration of these facts by personal observation.

Neuroses are the result of conflict, both of internal and external origin. This is a simple way of expressing the fact that we are in constant opposition with our desires on the one side and our craving for social approval on the other. The desire to satisfy all physical cravings represents the internal, while the desire to be approved by others represents the external conflict, being more particularly the conflict with environment.

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* Sprunt, p. 199. Vol. IX, Nelson's Medicine.

* Read before a Meeting of King County Medical Society, Seattle, Wash., Jan. 24, 1927.

Psychoneuroses are primarily brought about by virtue of our manner of thinking. This is done in two forms, reverie which is that form known as day dreaming, and reasoning which is the form used by the intellect. Most people have never been guilty of using their minds in any form of activity except reverie, because this method is the path of least resistance. When a neurosis develops, it is caused by prolonged indulgence in this day dreaming about the thing which we would like to have or do. Being aware of our limitations, we produce a tension which, if the desire is gratified, is released, or if it is suppressed, after a longer or shorter period it will break out in an overflow of energy which is a symptom of a neurosis. If we successfully repress these desires, we have no further trouble and remain normal, but if we are unsuccessful and the desire keeps urging itself upon us, we then develop a nervous tension or apprehension which is the forerunner of a more serious state.

The oldest nervous system in the body on the basis of the study of structure is the sympathetic which is found in a rudimentary form in various simple forms of animals, such as the star fish and others. It has become of such age from its long period of evolutionary activity that it controls and does its work practically automatically. The end organs of this system are a series of glands, distributed to various strategic parts of the organism, the chief of which are the thyroid, the suprarenals, the gonads and the pituitary.

These glands normally in life secrete fluids of various chemical composition and work in an harmonious relation with each other, producing a balancing effect upon the whole body of the individual. They are all important, but the most important from the standpoint of the neuroses are the thyroid and suprarenals, the others only being secondarily affected by these two which play the chief role in the protective activity for the conservation of energy used by the individual.

Under both external and internal conflict these two glands are the first to become disturbed in their activity. External conflicts engender fear; internal conflicts produce both fear and anxiety.

The emotions have the faculty of centering their activity upon the sympathetic nervous system and thence transfer their activity to the endocrine glands, causing them to act rapidly and excessively. Any excessive activity of any gland or organ is abnormal and will lead to conditions of, first, uneasiness; next, pain; and finally functional disease and on into organic disease with the whole syndrome of accompanying physical symptoms. One of the first glands so disturbed by overaction due to stresses is the suprarenal, and any form of fear of either long or short duration initiates an increased function of the gland, which in turn produces an excess of adrenalin which is poured into the vascular system, causing contraction of the capillary system and a narowing of the lumen of the larger vessels, increasing the strength and number of beats of the heart.

To find proof of all of this mechanism one has but to study closely the initiatory action of phobias, obsessions and hysterias, when manifesting. Cannon, Crile, Langdon Brown, Mosso and others have made these same observations in connection with fear, pain and shock.

What is the meaning of these activities? It is that the human organism, being a machine for the conversion of energy, when called upon must supply this energy regardless of consequences. So in the case of these internal fears and compulsions the tensions become so great as to use up all the surplus energy in repressing the injurious action and hence, more energy and an instantaneous supply being necessary, the suprarenals must furnish this extra power to keep the human machine going. The thing that happens in most of these neuroses is that the normal energy is being so constantly used up in the control against yielding to impulse that the glands are forced to overwork for long periods of time. When any organ overworks for indefinite periods, it soon exhausts itself and finally cannot supply the secretion up to chemical standard as often as is demanded. Next, it overdoes itself trying to meet all emergencies and becomes paralyzed and ceases to secrete. Any organ, when it overcompensates, hypertrophies and develops fibrous tissue which further decreases its secretory surface. This is exactly what happens in the adrenals.

When we remember that the suprarenals are very small to begin with, we can readily realize that the secretion at any one time must be of small amount. So, then, it is easy to understand that only a comparatively short time of excessive activity will temporarily exhaust it.

You are all familiar with the old blanket which used to disguise our medical ignorance, that is the term, nervous breakdown. This has long been discarded in the nomenclature of modern neurologists.

We have substituted neurasthenia to take its place and this from all indications will be short-lived.

Practically every physician has had in his practice a few nervous pets who make his life a misery by awakening him from a sound sleep, to come at once because they are afraid they are going to die before he gets there. When he arrives the condition has more or less quieted and the patient is in comfort again. This heart syndrome is due to the adrenals overdoing themselves into a spasm and then exhaustion. All that feeling of indifference, lassitude, lack of energy to make either mental or physical effort are due to the temporary paralysis of these small bodies above the kidneys.

As a palliative measure, dried glandular extract or even a one to one thousand adrenalin has been effective in stabilizing and adjusting this jaded gland to future work. This measure is only an auxiliary and cannot be depended upon for constant usage. The only way to stop the wear and tear is to go to the source of the difficulty, which is the tension produced by virtue of the repression practiced by the patient either consciously or unconsciously against some unsocial desire. Psychoanalysis and education of emotional control is the only permanent method of restoring this gland to normalcy, where the primary cause was due to a psychoneurosis. I am not referring here to the depletion of the gland in such cases as tuberculosis, mineral poisons or endogenous toxins.

We owe to Prof. Cannon the discovery of the effect of emotions on the endocrines, most particularly the primary effect on the adrenals. But we owe a greater debt to Dr. Crile for his discovery that the action of the suprarenal is primarily and temporarily first to be noticed. Where there is sustained emotional tension, the thyroid takes up the burden, being stimulated in two ways; first, by way of the cervical sympathetic nerves; and, second, by the hormone of the adrenalin, contracting the gland through the circulation of the blood.

Every thing I have given you as to the excessive activity of the suprarenals applies to the thyroid with this exception, that it is capable of withstanding more emotional stress for longer periods and can adjust itself to normal action after much harder usage than any of the other endocrines.

I will be compelled to hurry over the after-effects of long psychic tension on the thyroid and will dismiss this part of the subject by the statement that in all of my cases of psychoneuroses I have not failed many times to observe either suprarenal or thyroid dysfunction. In the height of anxiety states there is always a high basal metabolic rate. In the periods between the intense mental stresses there is usually a minus basal metabolism, thus establishing at once a proof of the exhaustion of these glands from long continued overactivity.

In every case which applies for treatment I make it a routine to look closely for glandular disturbances. One of the best clinical signs of adrenal insufficiency is that given by Dr. Carlos F. Arroyo of Tampa in the *Medical Journal and Record* for January 2, 1924. He describes the sign as follows which he calls "asthenocoria." When exploring the pupillary reflex, I found that the iris of these cases although reacting readily to light was sluggish, the contraction was flabby or asthenic. By making the patient look at the light we see that immediately after the initial miosis the pupil starts to dilate slowly as if it does not want to, seems to contract again, but the dilation gains the upper hand and after a fight lasting about forty seconds the pupil remains dilated, in spite of the persistence of the exciting agent. This sign is constant and persistent in all cases of hypoadrenia and in all its clinical forms. In the normal individual it does not occur."

Besides Arroyo's test I use Sargent's white line for corroborative evidence. This line is the result of stroking a patient's abdomen or chest lightly with the blunt end of a pencil or pen, where after a few seconds a whitish discoloration occurs over the area stroked. This lasts from forty seconds to two or three minutes, according to the intensity of the hypoadrenia.

These two tests, I believe, are proof enough of a lowered working capacity of the suprarenals. The metabolic test, together with the suprarenal sensitization test will give us all the evidence we need as to the function of the thyroid.

We cannot divorce the mind from the body or the body from the mind. What affects the one affects the other. When we have any form of mental disturbance from a psychoneurosis to frank insanity, we can be well satisfied that the endocrine system is out of balance at least temporarily, and there is a vicious circle in operation, in which the primary cause is an uncontrolled emotional process, affecting the physical being and all the glands of internal secretion. These in turn affect the body economy and the metabolic changes cause lowered resistance both mental and physical. The circle is completed by the mind indulging in anxiety and fear over the serious physical condition, and this will operate as long as the individual lives, unless the adjustment is made to the conflict by hygienic and dietary treatment associated with psychologic intervention.

Case histories would be interesting, but when I say I have never had a case to treat which did not show some glandular disturbance, that numerous ones have shown toxic goiter, that several have had pituitary disturbance, I have given all the information that is worth knowing from a series of actual cases. I have mentioned little about the pituitary gland. This was intentional because, as Vincent so aptly states, it has a synergic action with the suprarenals. However, he believes with some other observers that its action is primarily upon involuntary musculature.

SUMMARY

1. There has never come to my notice for treatment a compulsion, phobia, hysteria, anxiety neurosis or neurasthenia which has not at some time shown a temporary or more often permanent thyroid or suprarenal disturbance.

2. The suprarenal is primarily affected by oversecretion and lastly by paralysis of action.

3. The thyroid is secondarily affected both by the cervical sympathetic system and the hormone action of the adrenalin in the blood.

4. About thirty per cent of the psychoneuroses show symptoms of thyroid involvement with evidence of iodine poisoning.

5. None of the psychoneuroses can be permanently relieved until the emotional stresses are taken care of and the physical organism is given an opportunity for rest and reconstruction, so that it may more adequately withstand the strain produced by the repressions.

6. The pituitary as well as other glands is not discussed here because of the paramount importance of the thyroid and suprarenal, when it comes to a question of emotional conditions.

A REVIEW OF THE THYROID GLAND*

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Our knowledge of the thyroid gland is very recent. Changes are being made in our treatment, new ideas are being brought forth daily, so that in order to keep in contact with the new developments we must have the subject constantly before us. A repetition and a recapitulation of facts is beneficial to all.

The thyroid gland is one of the most interesting subjects we have to study. This classification that I give you is the one used by Plummer and Boothby of the Mayo Clinic, where according to Boothby they are handling 5,000 goiters a month, 60,000 a year, and the number is ever on the increase. To me these figures are astounding, but when you witness the number of cases that are passed through the clinic in this division they are very easy to believe.

1. Colloid goiter, divided into simple and adolescent, in which we find the acini filled with colloid material, a gland stimulated to increased production to make up for deficiency in thyroid secretion, resulting in colloid formation with compensatory growth. Usually a low basal metabolism rate. Anything below minus 28 is liable to produce myxedema.

2. Adenomatous. (a) Without hyperthyroidism, divided into simple, fetal, degenerative and calcified. (b) Adenoma (with hyperthyroidism). Glandular formation of normal thyroid tissue within a fibroid capsule. When active, produces an overabundance of good thyroid secretion, with symptoms of hyperthyroidism with nervousness. Relatively low metabolic rate, plus 20-60, though may be higher.

3. Exophthalmic or hyperplastic. Hyperplasia or proliferation of epithelium. When active, produces an abnormal secretion, characterized by symptoms of hyperthyroidism with nervousness. Relatively high metabolic rate, plus 20-100.

4. Thyroiditis. Simple inflammation from hyperactivity, embolic with abscess formation and other causes. Usually a hyperactivity of the thyroid of this nature is followed by destruction of thyroid tissue and usually myxedema resulting.

5. Malignancies. Usually found in operation, though a marked irregularity may show before. Treatment is surgical and the use of radium. There have been instances of three or four year cures with the use of radium at the Mayo Clinic.

6. Myxedematous goiter is a deficient goiter. Usually begins with a metabolic rate around minus 28 or below.

SYMPTOMS

1. Hyperthyroidism. Cardiac insufficiency, shortness of breath. In extreme cases edema. Myocarditis, decreased ability to stand heat, increased ability to stand cold. Rapid loss of weight with a good appetite, loss of strength, excessive perspiration.

Exophthalmic. The above symptoms, plus useless and purposeless movements, fine tremor, posing.

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* Read before the Marion-Polk-Yamhill Counties Medical Society, Salem, Ore., Oct. 19, 1926.

Exophthalmus indication of past activity; a stare indication of present activity; recession of the quick under the nails, coarse ridges on the nails. Sometimes present in adenoma as well. Extreme cases nausea and vomiting. Diarrhea.

2. Hypothyroidism or myxedema (the word "hypothyroidism" is not recognized by either Plummer or Boothby). Characteristic facies, increased ability to stand heat, decreased ability to stand cold, slow speech, movement and perception, lack of pep. Patients cannot force themselves into action; they feel like a slow moving picture. Velvety tactile sensation. A scaly skin. Skin comes off on stockings. Thick spongy feeling on deep pinching of skin. Metabolic rate below minus 28. These patients may feel nervous.

TREATMENT

1. Colloid. Desiccated thyroid tablets. Thyroxin plus iodine. The adolescent type usually disappears before the age of 20, if treatment is instigated early enough.

2. Adenomatous. Rest but preferably surgical removal (Lugol's solution over a long period of time activates).

3. Exophthalmic. Hospitalize the patient. Lugol's solution, ten drops t.i.d. until the metabolic rate drops. A lower pulse rate is an indication of this. When the patient picks up, operate.

4. Thyroiditis. Never operate because the gland will eventually become depleted anyway.

5. Malignancy. Surgery plus radium.

6. Myxedema. Deficient thyroid, treated with thyroid tablets, until the metabolic rate is brought up to within normal limits, and then kept there by a regulated daily dose of tablets.

A secretion of the thyroid gland is classified as good and bad. The good equals internal secretions plus iodine; the bad internal secretion minus iodine. With your Lugol solution, which is a one per cent solution of iodine in a five per cent aqueous solution of potassium iodide, an attempt is made to make a normal thyroid secretion out of a bad secretion by the introduction of iodine where it belongs.

An interesting note on Lugol's solution is as follows: The use of Lugol's frequently causes a rash. Double the dose and the rash usually disappears. The reason for this is unknown.

Boothby is an internist, and after his many years of experience with the thyroid gland has formed the opinion that every adult goiter is potentially surgical. It may not prove to be, but is so primarily and potentially. Medical treatment gives the patient improvement for a temporary or indefinite period, but eventually surgical removal is indicated. This is especially true with the hyperactive goiter. The colloid or deficient type may never reach the surgery.

Dr. Saurman has treated goiters medically for years, and has gradually formed the opinion that medical treatment is principally palliative and never permanent, with the exception of the adolescent or deficient type.

Since surgery is considered the principal method of treatment, the indications for surgery are in order.

1. Adenoma. Anytime the patient's strength is sufficient to withstand infection and to keep up cough reflex.

2. Exophthalmic. Same as above, when the metabolic rate and pulse are down and the patient is on the pick up. The heart must be very bad to be a contraindication for surgery of the thyroid, and almost never. As a matter of fact, they consider at times that the heart may be in too bad a shape not to operate.

3. Thyroiditis. Never operate, because a deficiency usually results when the symptoms subside.

4. Colloids will decrease in size under Lugol's.

The amount of thyroid tissue to remove is important because, if you remove too much, you are hazarding the parathyroids and recurrent laryngeal nerves, and run the risk of producing a deficient thyroid condition. If not enough is removed, the patient may have a return of active thyroid symptoms. The rule that is followed by Pemberton and others of the Mayo Clinic is to remove all tissue possible without hazarding the parathyroids and recurrent laryngeals.

The type of anesthetic to be used is important, local anesthesia being the most popular, or a combination of local or gas, ethylene preferred. The solution of novocain may be one-fourth, one-half or one per cent. If a great quantity is used there will be some danger of toxicity in the one per cent solution.

Nerves that are cut may regenerate, those tied in ligatures never.

The only indication for digitalis is when the heart is persistently bad after the metabolic rate is down, and the patient has had rest in bed for a prolonged period. Its use increases the mortality rate. No one knows why. The only indication for ligation is the failure to improve after a prolonged treatment or the impatience of the patient or his family. Three or four months later a thyroidectomy is indicated.

For a time after the operation there is hyperactivity from trauma or perhaps compensatory. The patient should be kept on Lugol's until the rate remains within normal limits without it. As the course of hyperactivity lengthens, the patient can carry a higher rate without a crisis. The point of interest to be remembered is that we may have an adenoma combined with an exophthalmic type of gland. As a matter of fact almost all of the types are subject to mixing.

Another point of interest. When a case of apparent diabetic coma does not respond to insulin, suspect an exophthalmic goiter and give Lugol's.

Theories. Hyperactivity of growth and secretion is produced by a stimulation of unknown origin. Colloid growth is caused by stimulation of a gland which is not capable of secreting the proper amount of thyroxin, resulting in the acini becoming filled with colloid material. In adenoma hyperactivity is caused by an increase in stimulation, producing superabundance of good secretion from normal glandular substances. Exophthalmic hyperactivity is caused by an increase in stimulation of hyperplastic tissue, producing a bad secretion of thyroxin, minus iodine. Therefore, one can see the reason why Lugol's solution is not indicated in adenomas, there being already a superabundant secretion of thyroxin, plus iodine; but it is absolutely indicated in preliminary and postoperative treatment of exophthalmic goiter, where there is a superabundant secretion of thyroxin, minus iodine.

I am not going to burden you with the details of case reports, but have selected at random a few cases more or less uncommon which will serve to illustrate a few points mentioned in this paper.

Case 1 is interesting because it is one of cystic adenoma which became active.

A man, age 40, presented himself June 19, 1925, complaining of gas around the heart. Stomach trouble for last ten years, some pain in lower right side, also in stomach on deep pressure. A diagnosis of duodenal ulcer was made and subsequent treatment instituted. It was noticed at the time of his examination that he had a remarkably enlarged thyroid gland on the right side and yet, without apparent clinical symptoms, the matter was temporarily overlooked. The patient made a beautiful clinical recovery from his duodenal ulcer, made a corresponding gain in weight and felt better.

He reappeared at the office four months later, complaining of loss of strength and weight, nervousness, dizzy spells, rapid pulse and irregular heart. His metabolic rate was a plus 20. His goiter was subsequently removed under local anesthesia. Pathologic diagnosis returned was a cystic adenoma.

This patient made a beautiful recovery from his clinical symptoms. Pulse dropped from a more or less constant 104 to 86. He made a gain in weight from 154 to 165 pounds and has been apparently well for the ensuing year.

This case is of interest merely because of the sudden activity of a long standing cystic adenoma.

Case 2 is of interest because of the diagnosis of fetal adenoma of long standing which became hyperactive. A woman, age 57, presented herself Dec. 5, 1925, complaining of weakness, nervousness, swelling of ankles, dizziness, irregular heart, inability to lie on left side for several years, shortness of breath on exertion.

Family history and past medical history unimportant. Present history began two years ago, when she began to notice the above symptoms which became gradually worse though not markedly so. She gradually lost weight, dropping from 135 to 126 pounds in past two months. Appetite good, sleeps fairly well, although wakens and remains so for several hours. Bowels regular and not constipated.

Physical examination reveals myocarditis, old inactive tuberculosis, almost complete perineal tear, old pleurisy on the left posterior side, anemia and slight enlargement of thyroid gland.

She refused surgery and was immediately placed on forced feeding and intravenous iron and bromides. Weight gradually rose to 130 pounds and she felt better, but immediately began to lose ground again, at which time she consented to have her thyroid removed. Diagnosis was returned from the pathologist of fetal adenoma. She made a rapid recovery from her nervousness and irregular heart, gained her weight back to 135 pounds and has felt remarkably well for the past eight months.

Case 3 is of interest because of diagnosis of colloid gland with a moderately diffuse adenoma.

A woman, age 40, presented herself Dec. 8, 1925, complaining of nervousness, smothering spells, distress in stomach and an aggravated tremor.

Family history and past medical history unimportant. Present history dates back for a period of two years, during which time she has had a gross tumor, which has been so severe that she is unable to stand in the presence of strangers or to sit down and hold any object in her hands or carry on a conversation in the presence of any one except her immediate family.

Physical examination reveals bad tonsils, one bad tooth, thyroid gland shows only slight enlargement bilaterally. Chest negative. Heart in good condition. Pulse 86. Abdomen negative, except for scar of appendectomy. Blood pressure 105-70. Normal weight 115 pounds, present weight 98 pounds. Gastrointestinal tract x-rayed and found to be negative. Metabolic rate plus 12.

With such a gross tremor we were led to believe temporarily it might have a neurologic foundation, the exact nature of which we could not determine. She was placed on forced feedings, irons and bromides, her tonsils were removed and teeth cleaned. Her weight gradually rose to 110 pounds. She felt considerable better and her tremor was less marked. But without any cause whatsoever she began to lose weight and her tremor became worse. Her metabolic rate Feb. 15, 1926, was found to have risen to plus 17.

The goiter was removed under local anesthesia. From the third postoperative day her tremor entirely disappeared. She is now able to talk and converse in the presence of strangers without tremor. Her weight has risen to 120 pounds and in the past eight months she has been feeling remarkably well.

This case is unusual because of the mild hyperactivity and the markedly exaggerated gross tremor, with slow pulse and practically no other clinical findings. Pathologic diagnosis of retained colloid with moderately diffuse adenoma.

Case 4 is of interest because it is a pure toxic adenoma with a very bad myocarditis complicating.

A woman, age 43, presented herself June 7, 1926, complaining of weakness, shaky sensation and sickness of stomach, dizziness, nausea, belching, regurgitation of food. Does not sleep, rolls and tosses.

Family history unimportant. Social history negative. Past medical history unimportant, except for influenza in 1918. Was very ill for two weeks. Present history began about one year ago, previous to that time having been in good health. Began to complain of weakness, shortness of breath on exertion. Heart beat fast, if a slight incline or stairway had been negotiated. Heavy feeling over chest, loss of weight and strength with a remarkably good appetite.

Physical examination reveals bad tonsils, a few bad teeth, a moderately enlarged pulsating thyroid gland. Blood pressure 128-78, pulse 88. Metabolic rate June 10 plus 33.

Because of exaggerated myocarditis she was sent home to bed for two weeks. On her return the metabolic rate had dropped to plus 28, at which time her tonsils and infected teeth were removed. She was sent home for another rest period of two weeks. On her return the metabolic rate was plus 21. Her thyroid was removed under local anesthesia. Diagnosis was toxic adenoma.

The patient made a good recovery from her nervousness, dizziness and nausea, gained a few pounds in weight, but her heart remained very bad. After a few months it was still irregular and she was complaining of shortness of breath, at which time she was placed on digitalis with a marked improvement of her heart condition and steady improvement to the present date.

This case is of interest because of the complicating myocarditis. The operation having no detrimental or beneficial effect on her heart. Improvement was received after prolonged rest and digitalis.

Case 5, one of pure exophthalmic goiter, is of interest because of the contrast in symptoms.

A woman, age 50, presented herself Oct. 3, 1925, complaining of being very nervous, melancholic, extreme shortness of breath on walking, rapid heart, bad dreams, loss in weight, with a good appetite, heat intolerance, easily frightened, frequent fainting spells.

Physical examination revealed marked exophthalmus, indicating past activity; pronounced stare, indicating present activity; gross tremor with unconscious and purposeless movements, very restless demeanor. Pulse 110. Moderate thyroid enlargement of both sides with visible pulsation noted. She had bad teeth and tonsils, and a healed pulmonary tuberculosis. Metabolic rate was plus 68.

She was hospitalized four days and pulse dropped to 90. Because of the impatience of the family the goiter was removed. After an uneventful recovery she found her nervousness had disappeared together with her melancholia. Her pulse dropped down to 82. She lost the stare and the purposeless movement and began gradually to gain in weight. After one year she was still enjoying excellent health.

The points of interest in this case are the difference in the symptoms and the height of the metabolic rate.

Case 6 is unusual because it is a combination of diabetes with exophthalmic goiter.

A woman, age 52, presented herself Oct. 6, 1926, complaining of great nervousness, hot flashes, sweats, cannot stand heat, loss of weight, heart beats too rapid and is irregular. Both legs seem paralyzed at times and numb. Extreme polyuria.

Family history: Father died aged 66 Bright's disease. Mother living and well at 80. Has one sister, age 48, with a very large goiter. One niece has a goiter.

Social history: Housewife, worked very hard, mostly out of doors on a farm. Menstruated at 14, always regular. Married at 19, has had nine children, oldest thirty, youngest nineteen; menopause at 42, normal.

Past medical history: No serious illnesses, no surgery. Slight attack of influenza in 1918.

Present illness: First noticed goiter about age 20 after first childbirth; has always been large since. Has had slight attacks like the present, but has gotten over it quickly. Yesterday became nervous and excitable, vomited once, heart rapid and irregular, became frightened.

Physical examination reveals eyes restless, marked stare, widening palpebral fissure but no exophthalmus. Nose, ears and sinuses normal. Tonsils large and badly infected. Breath acetone-like. Teeth good, except one upper right molar heavily filled which illuminates darkly, and one left lower heavily filled molar. No cervical glands present. Tumor mass the size of a small orange located in midline of throat in the region of the isthmus, semisoft and freely movable. Chest negative. Heart enlarged, quite irregular with evidence of myocardial changes. Abdomen scarred with many pregnancies, otherwise negative. Pelvic examination: small cervical erosion, bad rectocele, tear third degree. Pulse 106. Blood pressure 150-90. Knee jerks and deep reflexes present. Fine tremor present in fingers. Metabolic rate plus 69. Urinalysis: yellow, cloudy, sp. gr. 1027, very acid, albumin negative, sugar four plus, diacetic acid present. Blood sugar .3. Gastric analysis ten a.m. 85 mils recovered, free acid 36, total acid 52, blood negative. Blood count: Hbg. 88; w.b.c., 8,200; r.b.c., 3,120,000.

Patient was placed immediately on insulin, giving eight units. Blood sugar dropped to .2. Insulin therapy was continued until the blood sugar dropped to .09. She made a great improvement in symptoms, lost her acetone breath and polyuria, but she still retains her nervousness, hot flashes, heat intolerance and tremor. With the return of her sugar threshold to normal she was observed over a period of three weeks and her goiter removed under local anesthetic. She is now ten days postoperative and has lost the stare and nervousness.

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GOITER*

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This paper represents the deductions made by the writer from his personal experiences in the medical and surgical treatment of approximately four thousand cases, three thousand of which were medical and one thousand surgical. It is not my intention to give the complete pathology, symptomology, etiology, diagnosis and clinical course of each form of goiter, for these may be found in the text books, but to stress the practical points and lessons that we have learned and which have since been of much value to us in classifying and handling our cases.

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*Read before the Thirty-fourth Annual Meeting of Idaho State Medical Association, Sandpoint, Ida., Sept. 2-4, 1926.

If one would avoid embarrassing mistakes, a careful, painstaking examination of every patient is essential. Cases referred to us as goiters have frequently been found to be suffering from other maladies, such as aneurism, syphilitic aortitis, malignant tumors of the mediastinum, mental disturbances, neuroses, pernicious anemia, valvular heart lesions with broken compensation, etc. On the other hand, and this is far more frequent, patients suffering from toxic goiter and particularly those that have but a moderate enlargement of the thyroid, have been treated for nervous prostration, heart disease, neuroses, etc., the thyroid disturbance being entirely overlooked.

The examination of the patient should include:

1. The history of the patient, in which is noted the age, nativity, social status, sex, present symptoms, previous illnesses, family history, duration of illness, etc.
2. A complete physical examination.
3. A fluoroscopic examination of chest in which is noted the size of the heart and large vessels of the heart, the presence or absence of a thymus, lesions of the lungs, condition of mediastinum, deviation or compression of trachea or esophagus, intrathoracic tumors, etc. Cases in which there is any question should be plated as well as screened.
4. A basal metabolic test.
5. A complete chemical and microscopic test of urine and blood, including Wassermann and blood calcium tests.
6. An examination of the vocal cords by a competent laryngologist, preferably one not connected with one's own office, as his evidence of a previous vocal cord paralysis would be of much comfort, were legal complications to arise following a thyroidectomy.

We have found the following classification to cover practically all cases coming under our care:

1. Simple hyperplasias of adolescence.
2. Colloid goiter.
3. (a) Adenoma without hyperplasia; (b) adenoma with hyperplasia.
4. (a) Exophthalmic goiter (primary); (b) exophthalmic goiter (secondary).
5. Thyroiditis (Woody or Reidel's, tuberculous, syphilitic.)
6. Malignancy.

SIMPLE HYPERPLASIA

The first type is partly physiologic and, in a non-goiterous district, usually disappears at maturity, but in goiterous districts the early administration of iodine will prevent its further development. If iodine were given to all children between the ages of four and sixteen years of age, that generation would not be afflicted with any of the simple type of goiter. Marine and Kimbal have proven that 10 mg. of iodine once a week will effectually prevent the development of simple goiter.

COLLOID GOITER

Colloid goiter is a further development of the simple hyperplasias of childhood and is recognized by its smooth, globular contour. If treatment is not too long delayed, it will respond to small doses of thyroid gland. Surgical treatment is indicated in large colloid goiters that are producing pressure symptoms and also for cosmetic reasons. Neglected colloids develop adenoma which can be cured only by surgery.

ADENOMATA

Adenomata are recognized by hard nodular and sharply circumscribed masses, of which they are composed. After encapsulation has taken place, medicine, x-ray, iodine are useless and they should be removed surgically. Adenomata, while benign at their inception, sooner or later cause trouble; either by a disturbance of the normal thyroid function which would be manifested by tachycardia, nervousness, irritability, tremor, loss of weight and strength, profuse perspiration, etc., or malignancy may develop. This has been found to be present in our cases in a little over 2 per cent. The long standing toxic adenomata are poor surgical risks as there is always present a damaged myocardium. Hence, their early removal is to be advised.

EXOPHTHALMIC GOITER

Exophthalmic goiter presents an entirely different picture from the preceding types and its etiology is likewise different. While the active cause has been shown to be due to an imperfect thyroxin, the sympathetic nervous system receives the brunt of the attack. This is shown by the marked vasomotor disturbances, the increased metabolism and erratic action of the heart. The disease is rapid in its onset and almost invariably follows some emotional stress, such as disappointment in love, grief, financial worries or prolonged overtaxation of the physical powers.

Exophthalmic goiter may occur at any age from the infant in arms to the man or woman of eighty, the majority, however, occurring about the beginning of the third decade. The gland may be large or so small that it can scarcely be palpated. The gland is usually found to be moderately firm and of uniform consistency and affecting all portions of the thyroid. There are exceptions to this rule, however. One lobe only may be enlarged and consist of a sharply circumscribed nodule that may be mistaken for an adenoma.

The diagnosis is easily made in the typical case, but is not so easy in others. The rapid onset following some emotional stress, the relatively high metabolism, tachycardia, loss of weight, nervousness, tremor, profuse perspiration, exophthalmos are usually enough to confirm the diagnosis. An important diagnostic point, which we have observed in practically all of our cases, is the optimism of the patient. Many consult a physician only because of the insistence of relatives or friends, the patients claiming there is nothing the matter with them, although the pulse may range from 120 to 140 beats per minute. They minimize all of their symptoms in marked contrast to the neurotic who exaggerates all of his.

The treatment of exophthalmic goiter is surgical, and subtotal thyroidectomy should be performed as soon as diagnosis is positive and the patient is in condition for the operation. If operation is performed early before permanent visceral lesions have occurred, the patient will be returned to practically 100 per cent health. On the other hand, if one waits too long, the patient will have a permanently damaged myocardium, permanent exophthalmos and unstable nervous system for the balance of his life. The preoperative treatment of the exophthalmic goiter patient is of the utmost importance and consists of complete mental and physical rest, forced feeding and the use of Lugol's solution. Its use has revolutionized the operative treatment of exophthalmic goiter. The operation has been changed from the severest surgical risk to a comparatively safe procedure. Lugol's solution, properly administered, has obviated the necessity of ligation and partial thyroidectomy and, if the patient previous to the thyroidectomy has been properly "lugolized," there is little or no reaction following the operation. If not properly administered, however, the remedy may act as a two-edged sword.

We have found the following precautions most essential in the administration of Lugol's solution: Explain to the patients the benefit they will receive following the taking of the remedy, also stating that the beneficial effects are only temporary and obtain their consent to a thyroidectomy as soon as in your judgment their condition is such that they will stand the operation. The maximum improvement is usually the eighth day, some requiring a longer and others a shorter time.

If the patient continues too long on Lugol's solution, his symptoms return and the case again becomes a poor surgical risk and will not then respond so well to iodine. We make it a rule never to prescribe Lugol's solution unless the patient consents to hospitalization and thyroidectomy following his initial improvement.

The mixed type of secondary Basedow's disease is seen most frequently in patients who have passed middle age, who for many years have had an inactive adenoma. The remaining or hitherto healthy portion of the thyroid becomes activated through some emotional stress, such as grief, worry, financial loss, hard work and privation or by the administration of iodine or the changed secretion of the endocrine glands so frequently seen in women at menopause.

The clinical picture may be identical with that of an exophthalmic goiter but the history of a previous long-existing adenoma helps in making a correct diagnosis. Many cases, however, are diagnosed only from a section of the removed gland, in which one finds one or more adenomata surrounded by parenchymatous thyroid tissue.

The differentiation of these cases from the pure type of exophthalmic goiter is not important, as the preoperative management is the same, except that they require a longer time on Lugol's solution, rest, etc., before a thyroidectomy may safely be performed for the reason that the long-existing adenoma has caused myocardial changes, so that a longer period of rest is needed to improve the heart muscle tone.

Before submitting these cases to operation, tests should be made to determine the condition of the heart muscle. A very practical test and one easy of application is that devised by Dr. Ramsey,* an internist associated with Dr. Crotti of Columbus, Ohio. The test is made by placing a stethoscope over the precordia, and by percussion outlining the area of cardiac dullness. The patient is then asked to raise himself from the recumbent to a sitting position, repeating the maneuver about ten times. The percussion-ausculation is repeated and, if the heart muscle is much weakened, an increase of the cardiac dullness will be found, varying from two to six or more centimeters, according to the degree of myocardial degeneration. These patients should not be kept continually in bed before operation but should be allowed to sit up or walk about the room from one to three hours daily. Moderate exercise assists in strengthening the heart muscle.

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* Personal communication.

THYROIDITIS

Suppurative thyroiditis, unless due to trauma, is usually secondary to foci of infection elsewhere in the body. If the infection is not virulent, resolution is the rule, but when the infecting agent is more virulent, suppuration occurs and the treatment, of course, will be to evacuate the abscess.

Woody thyroiditis, or Reidel's disease is the result of a long continued low grade infection. The thyroid gland becomes hard and firm as a piece of wood, and surgical treatment often becomes imperative to relieve the constriction of the trachea caused by the contraction of the fibrous tissue. The operation is exceedingly difficult, owing to the obliteration of all the natural planes of cleavage and the dense adhesions. It will often be impossible to remove much of the thyroid, but if one can remove the constricting portion across the trachea, the patient will be made quite comfortable.

Woody thyroiditis is to be differentiated from malignancy and from tuberculous infections. The rapid growth, the involvement of the entire thyroid gland, the comparatively smooth contour of the surface, the woody hardness and immobility of the mass are important points in differentiating from malignancy clinically. The microscope, of course, confirms the diagnosis of the cut section. Fortunately this condition is rare. We have had but two cases in our series.

Tuberculous thyroiditis is usually secondary to tuberculous infection elsewhere in the body. We have had but one case that we believe to be a primary tuberculous infection of the thyroid gland. The patient was poorly nourished and complained chiefly of pressure symptoms, the gland being hard and completely surrounding the trachea. It was removed in toto, leaving only a thin layer of thyroid tissue attached to the capsule. One would anticipate a myxedema following so complete a thyroidectomy, but the patient has been under observation for three years and as yet has shown no signs of this condition.

If all thyroid glands removed were more carefully sectioned and examined for tuberculous infections microscopically, there is no doubt that many minute foci would be found.

Syphilitic thyroiditis. We frequently have had patients showing a positive Wassermann, associated with a toxic goiter, but have had no case in which the hyperthyroidism could be proven to be due to the luetic infection, antisyphilitic treatment having no effect on the hyperthyroidism, and vice versa. Removal of the thyroid has had no effect on the Wassermann reaction, although it is claimed that a high degree of hyperthyroidism will give a positive test. We have not been able to confirm this statement.

MALIGNANCY

Malignancy of the thyroid gland has been found in our series in a little over 2 per cent. The youngest patient was twenty years old and the oldest eighty-four. The diagnosis of malignancy is far from easy in the early stages, but so commonly have our patients complained of a feeling of discomfort (not an actual pain) in the thyroid that we suspect malignancy whenever they have a nodular enlargement of the thyroid and complain of this symptom. The early removal of all nodular tumors of the thyroid is to be advised because of the danger of malignant degeneration.

After the malignant growth has broken through the capsule and invaded the surrounding tissue, it is impossible to remove all cancerous tissue. The best you can hope for then is to remove as much as possible and depend upon x-ray treatment to prolong the life of the patient. We have had one case of an inoperable cancer that has been kept fairly comfortable and the growth much reduced by radiotherapy for twenty-four months.

GOITER ANESTHESIA

In discussing surgery of the thyroid gland the consideration of the anesthetic is of prime importance. Our experience has convinced us that ethylene-oxygen comes the nearest to approaching the perfect anesthesia for thyroid surgery that medical science has thus far discovered. Our conviction is supported by the fact that we have not yet found any case in which ethylene was contraindicated.

Ether anesthesia was given a fair trial and was discarded in favor of local anesthesia. The great disadvantage of the latter is the resulting nervousness, anxiety and worry which increase the pulse rate, thus throwing an extra load on a heart which in many cases is already badly damaged by a longstanding hyperthyroidism. We have had some cases which have had severe cardiac weakness during local anesthesia, due entirely, I believe, to the terrific mental strain to which they have been subjected. The next step was the combination of local and nitrous-oxide which checked somewhat the nervous symptoms and pulse rate. We began to use ethylene early in 1924, at first cautiously and in combination with local anesthesia. Although the combination was satisfactory, it did not eliminate the psychic shock and for this reason we gradually discontinued local anesthesia and adopted ethylene entirely.

During ethylene anesthesia the pulse rate drops as soon as the patient is asleep, which usually requires one to three minutes. A comparison of anesthetic records convinced us that ethylene was superior to any previous anesthesia. We have prepared slides from selective exophthalmic cases which illustrate graphically the comparative degree of strain to which the heart is subjected during local and during ethylene anesthesia.

It has been our custom to augment ethylene anesthesia with a preliminary narcotic which varies according to the toxicity and age of the patient. The older patients do not tolerate large doses of morphine, regardless of their state of toxicosis. For the average toxic patient we administer pantopon, 1/3 grain, and scopolamine, 1/200 grain, an hour and a half before and repeat three-quarters of an hour before operation. Some cases, however, do not receive one-half this amount.

After the patient has been given this perliminary narcotic, the shades are drawn in the room and before he is taken to the surgery a towel is pinned over the head and eyes. The patient is never conveyed into the operating room until all the surgical instruments are placed on the table and there remains only the local preparation and the draping to be done which is accomplished as quickly and as quietly as possible.

The anesthetic is then started. The anesthetist, being relieved of any interference for draping, is free to give his undivided attention to the important stage of induction. During the course of the operation the blood pressure is taken from time to time which is a valuable aid in determining the condition of a very bad risk. Many cases of beginning shock have been recognized early—sometimes before any appreciable change in the pulse can be felt.

The practice of stealing the goiter from a very nervous patient has long been discontinued. This becomes unnecessary after he has been on preliminary treatment for a week or ten days, as the nervous condition is much improved and the hospital life becomes monotonous and he is usually anxious to have the ordeal over.

To minimize the scar following a thyroidectomy we have devised the following technic. The first step is a careful study of the surface markings of the neck, and as a rule one will find a natural fold of the skin where the incision can be made. If the goiter is large, these folds may be obliterated, but by forcibly flexing the chin upon the chest they will be seen and should be marked with nitrate of silver or some substance that will not be removed by the ordinary preparations of the operative field. As the cicatrix will descend (following the operation) from one-half to one and one-half inches, depending upon the size of the goiter, due allowance should be made for this in selecting the site of the incision.

After the patient has been placed on the table and head-rest and screen (devised by Prof. de Quervain) are adjusted, the field is prepared by McDonald's solution, which is not so irritating as iodine which often causing vesiculation in sensitive skins. The excess of McDonald's solution is washed off with alcohol, the one objection to it being that it will cause a fat necrosis, if allowed to come in contact with the fatty tissue.

An incision from one and one-half to two inches long is then made through skin and platysma muscle to the fascial layer covering the sternohyoid and omohyoid muscles. After the site of the incision has been outlined, one or more light surface scratches should be made across this line to show the original position of skin when closing. Many operators dissect the platysma separately from the skin and close it by itself, thinking that unless this is done its pulling widens the scar. Other operators disregard this muscle and have as equally good cosmetic results. Inasmuch as it is a time-consuming procedure, the increasing handling of the tissue causes an increase in the postoperative oozing, which in my opinion is one of the chief causes of poor cicatrices. Depending upon the size of the growth to be removed, the skin and platysma are undermined through the incision from an inch to two inches in all directions. The muscles are then separated in the median line, down and through the surgical capsule and the thyroid exposed.

With a curved needle on a catgut ligature the gland is picked up and by placing succeeding sutures down the sides of the gland the entire lobe is dislocated, the vessels are caught, tied off and the desired portion resected, leaving a small portion of thyroid adherent to the posterior capsule, thus protecting the parathyroids and recurrent nerve. As the posterior branch of the inferior thyroid artery supplies the parathyroid glands, it is better to pick up these branches near the trachea as one comes to them when resecting the gland. In this way the blood supply of the parathyroids will not be disturbed and postoperative tetany will be prevented. A similar procedure is carried out on the opposite lobe.

By thorough hemostasis and the packing of the cavity for a few minutes with gauze saturated with thromboplastin, one has a perfectly dry field which does not require drainage and one that heals by primary union. Where a drain is thought necessary, as in very large goiters, it is better to bring the drain out through the muscles on one or the other side, as a drain placed in the median line will frequently cause adhesion to the trachea. Many an otherwise good cosmetic result is marred by adhesion of skin to the trachea, causing a pulling and dimpling of the skin with each act of deglutition. Care in the closure of the different layers will prevent this. The sternothyroid muscles lie back of the sternohyoid and omohyoid. They should be caught with forceps and brought over the trachea. By the careful closing of the fascial layer covering the sternohyoid and omohyoid muscle one has a smooth surface to come in contact with under surface of platysma and consequently fewer adhesions.

The final and very important step is absolutely perfect coaptation of the skin edges. I know of no better or quicker method than by the use of skin clips. The cross incision will aid in bringing the skin into its original position, and, as the incision should be a slightly curved one, it is not easy to correctly approximate without these markings.

CONCLUSIONS

1. Thorough examination and correct diagnosis are essential.

2. The use of iodine in children not only prevents goiter in adolescence but also simple goiter in the adult.

3. Early treatment is urged in young adults, before formation of adenoma.

4. Surgical cases should have the benefit of early operation to prevent permanent visceral damage.

5. Proper preparation of patients should be made before submitting them to surgical treatment.

6. Special care is necessary in the use of Lugol's solution.

7. Ethylene anesthesia is advisable and blood pressure determination during operation.

8. Attention should be paid to cosmetic results.

EXOPHTHALMIC GOITER*

A STATISTICAL STUDY

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A statistical study is being made of the symptomatology of 400 thyrotoxic goiters. The following article is a preliminary report of the exophthalmic goiter group, the toxic adenoma to be discussed at a later date. Follow-up letters have been sent to each toxic goiter patient and so far 60 per cent of the questionnaires have been returned satisfactorily answered.

It is worthy of note that approximately 85 per cent of these patients were examined and the findings recorded by one person, Dr. Blackford. The degree of severity of symptoms and signs have been recorded upon a basis of one-to-four, with one mild, two moderate, three moderately severe and four severe.

The first recorded study of the symptoms and signs of toxic goiter dates back to 1786, when Parry was first to describe hyperthyroidism. His paper was both original and comprehensive. Flajani's description followed in 1800. The masterly treatise on exophthalmic goiter by Graves in 1835 was so impressive and complete that the disease is commonly known today by his name. In 1840 Basedow presented his classical paper on exophthalmic goiter. Theodore Kocher in 1878 performed the first thyroidectomy and since then has operated on more than 2000 goiter patients with a mortality of less than 0.4 per cent. In more recent years the studies of Cunningham, Marine, Mobius, Plummer, and many others have added considerably to our knowledge of the symptoms and signs and diagnosis of toxic goiter.

The age incidence of exophthalmic goiter in the Pacific Northwest is apparently higher than for the country at large. The average age upon admission was 38 years. Thirty per cent were in the fourth decade of life, 25 per cent in the fifth and only 20 per cent in the third. Most statistics give the highest percentage for the third decade. Fifteen per cent of our patients were in the sixth decade of life.

The interval between the date of onset and of examination seems in our series to be shorter than that reported by other authors. Though the average interval was eight months, we feel this is somewhat fallacious because 65 per cent of the patients came to us within six months of the onset. There were 7 per cent who came twenty months after the onset, thus elevating the average considerably. The most frequent interval in our series was four months. From 1918 to 1922 six months was the most frequent interval, while during the years from 1922 to the present time an interval of less than four months has been most frequent. So it seems that we are recognizing the disease earlier and are less commonly making a diagnosis of nervous breakdown, incipient tuberculosis, etc. True, there were quite a few of the fulminating type in young girls who came to the clinic early in a state of severe toxemia.

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* From the Mason Clinic.

The ratio of men to women as found by us was one-to-five as against one-to-eight as reported by most authors. The average age of the men was forty-two years and of the women thirty-four. Thirty-three per cent of the men were in the fourth decade of life, 29 per cent in the fifth with 24 per cent in the sixth.

There has always been considerable speculation concerning the etiology of exophthalmic goiter. One of the most frequently advanced theories has as its basis a derangement of the central nervous system. Most recent writers upon the subject feel that the emotional theory is considerably overworked. Foster suggests that an overwhelming majority of those who suffer severe grief, tragedies, etc., do not develop exophthalmic goiter; and that those who do are rather the exception than the rule. The following is a list of possible contributing nervous strain factors as found in those patients examined by us. Nervous instability since childhood 18; onset following tonsillectomy 8; following deaths in family 6; following childbirth 4; following menopause 4; following burning of home 1; following sea sickness 1; following studying for entrance examinations 2; following working overtime at office at night 3; following air raid on London during war 1.

There were thirty-four different chief complaints volunteered. Nervousness was the most frequent one, being mentioned by 53 per cent of our cases. Others were palpitation 30 per cent, loss of weight 26 per cent, presence of goiter 24 per cent, weakness 20 per cent, general debility 10 per cent, stomach trouble 8 per cent, dyspnea 7 per cent, edema of feet and legs 6 per cent, mental irritability 4 per cent, exophthalmos, general anascara, chronic headaches, diarrhea, each 3 per cent, cough, itching, choking sensation, rapid growth of goiter of long standing and tinnitus aurium, each 2 per cent, sea sickness, dizziness, insomnia, substernal pain, each 1 per cent.

The symptomatology of exophthalmic goiter can conveniently be subdivided as follows: Nervous system symptoms, symptoms of increased metabolism, cardiovascular symptoms, digestive symptoms.

Involvement of the nervous system has been in our experience the most frequent early evidence of this disease. It is very probable that these disturbances are secondary in the sense of being induced by the toxemia present. Organic nerve lesions in Graves' disease are uncommon. In a review of the literature, Heuer found eighty cases of involvement of the cranial nerve. In our series we found one. This was a paralysis of the right facial nerve which appeared three months after the onset of symptoms.

A history of nervousness was elicited from 96 per cent of our patients, and 62 per cent of these were classed as only moderately nervous. Most of them were seen early. In 33 per cent there was no previous history of nervousness. Mental irritability nearly paralleled the general manifestation of nervousness. Eighty-five per cent thus complained. Psychic disturbances, as delirium, delusions of the paranoid type and maniacal excitement are rare and are the manifestations of a severe toxemia. Less than 3 per cent of our patients were placed in this class.

Tremor is one of the cardinal symptoms rarely absent. This symptom could be demonstrated in 97 per cent of our patients. The tremor was "fine" in nearly every case. Patients not infrequently complained of a "trembling all over."

The increase in the basal metabolic rate in thyrotoxicosis is a constant finding. This test has been valuable in confirming the clinical diagnosis. In the mildly toxic cases of this study the average rise in metabolism was plus 27. These cases, it must be remembered, were diagnosed very early. Most authors give plus 43 as the average rate of mild cases. In the moderately severe cases, the average basal metabolic rate was plus 56, and those in the acute ascending stage averaged 76. In three instances the basal metabolic rate was plus 100 or higher. With rest alone the metabolic rate dropped in many cases 10 to 20 points, and with the administration of Lugol's solution over a period of two weeks to a month, nearly every increased rate was reduced to plus 25 or under.

Symptoms of increased metabolism are manifested in a syndrome that is very characteristic; there is a subjective sensation of warmth, a tendency to sweating, and increased appetite and loss of weight. A polyphagia associated with a continual loss of weight furnishes one of the most valuable aids in the diagnosis of exophthalmic goiter. Diabetes is about the only other condition offering a similar symptom-complex. Seventy-six per cent of the patients presented this combination of polyphagia plus a loss of weight. Subjective sensation of warmth and increased perspiration were each present in 88 per cent.

Loss of strength was observed in 94 per cent with a moderate loss in 72 per cent of this number and severe loss in 18 per cent. A striking observation was a loss of strength in the quadriceps muscles. The patient often complained of a "giving away" feeling, especially when ascending stairs. It is a queer fact that this condition is also often found in cases of myxedema.

Cardiovascular symptoms and signs may be the first to appear. An irritable heart with a rapid pulse is the first indication of the toxic effects of the goiter upon the myocardium. Subjectively this is manifested by palpitation of the heart, sensations of throbbing in the ear, neck, abdomen, or any other part of the body and often brings the patient to the physician as it did in 30 per cent of our cases. Palpitation, however, was experienced by 66 per cent of the patients and in most cases very early. Quite a few failed to give a history of palpitation, though the heart rate was 120 and over. There is no other symptom so directly related to the degree of intoxication as is the rapidity of the heart.

The tachycardia is not readily influenced by rest and is in this manner distinguishable from a "nervous irritability" of the heart. It is one of the most valuable diagnostic signs, especially in the incipient cases. The average pulse rate in the mild cases of this series was 109 upon admission. In the moderately severe group the average rate was 129 and in the severe cases approaching and during the crisis, the average rate was 156.

Elevation of the blood pressure was usually found, even in the rather mild cases. For those patients between twenty and thirty who were rated as "mild" the average finding was a systolic blood pressure of 142, while in the moderate cases it was 148 and in the severe ones 160. This elevation was in most cases a transitory affair, the pressure returning to normal after a little rest in bed.

The more serious heart involvements usually appear late; either in the acute ascending stage as the crisis is approached, during the crisis, or eight or twelve months later at the time of the second crisis. Dilatation of the heart appeared in 33 per cent of the patients, in 48 per cent of whom the heart was graded as slightly, and in 45 per cent as moderately dilated. Thirty-six per cent showed some decompensation. In 50 per cent of these the decompensation was graded as slight, in 32 per cent as moderate, and in 12 per cent as severe. Ten per cent of the latter group were patients who had passed the second crisis. Auricular fibrillation was evident in 12 per cent of the patients. A systolic blow over the entire precordium was nearly a constant finding and was often associated with the bruit heard over the various poles of the goiter.

Digestive disturbances usually develop late. Nausea, vomiting and diarrhea may appear at the crisis as it did in 4 per cent of the patients included in this study. The degree of polyphagia is usually present in direct proportion to increase in the metabolic rate.

Exopthalmos was found in only 41 per cent of this group. Seventy-five per cent is probably nearer the average as generally reported. This symptom is not a characteristic one, for we find it in tumors, inflammations, and injuries of the orbit, thrombosis of the cavernous sinus, in multiple sclerosis, bulbar paralysis, diabetes, and due to the amino-drugs. In this series there was no relation between the lobe of the goiter most enlarged and the eye involved. Eighty-four per cent of the findings were in patients rated as moderately severe and severe.

Goiter was recorded in 74 per cent of the cases. In 20 per cent the enlargement was rated as mild, in 66 per cent as moderate, and in 14 per cent as marked. It is quite interesting to note that in patients over fifty we frequently could find no evidence of goiter, even in those cases where the toxemia was very severe. Not infrequently a diagnosis had not been previously made, though all the cardinal symptoms and signs were present, except enlargement of the thyroid gland. A bronzing of the skin was a common finding in this group of cases.

Roentgenograms of the chest were made of each goiter patient. In this manner substernal goiters were found in 8 per cent of the cases. In half of these patients there was no external manifestations of goiter and with but one exception were cases of severe thyrotoxicosis.

There were twenty-nine different additional diagnoses made in this series of cases. Tonsillar infection leads the list with 84 per cent of the patients showing some degree of infection. Over 90 per cent of these patients were examined and classified by one person, Dr. Dowling. Classed upon a basis of one-to-four as described above, 16 per cent were classed as plus one, 35 per cent as plus two, 35 per cent as plus three, and 38 per cent as plus four for chronic infection. In order to determine if these figures were at all distinctive for exophthalmic goiters, a similar number of case histories, selected at random, were studied relative to tonsillar infection. These cases represented the general run of patients seen every day. The following percentages were found:

Fifty-two per cent of these patients had some degree of tonsillar infection. Thirty-eight per cent of them were classed as plus one, 48 per cent as plus two, 11 per cent as plus three, and 3 per cent as plus four.

Dental caries takes second place with a toll of 24 per cent. Then there were 17 cases of nervous exhaustion, 15 of neuritis and neuralgia, 11 of definite gallbladder disease, 9 of migraine, 6 of chronic nephritis, 4 each of mitral stenosis and menopause, and 2 each of lues, diabetes, cancer of the breast, myocarditis, otitis media and acute rheumatic fever.

SURGICAL VERSUS X-RAY TREATMENT OF HYPERTHYROIDISM*

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Waves of enthusiasm for the treatment of exophthalmic goiter and hyperfunctioning adenomatous goiter by means of the x-ray have treveled outward from radiologists for the past twenty-five years. In one of the largest clinics in the world x-ray treatment of goiter has been tried out and given up. Recently, since the meeting of radiologists in Cleveland, and judging from some articles which have appeared in the excellent radiological journals, another undercurrent of overenthusiasm relative to radiotherapy in hyperthyroidism has been distinctly noticeable.

There can be no denying that the x-ray does cut down the cavity of the thyroid gland in cases of the exophthalmic goiter complex. However, whether it gives sufficient control to warrant its use routinely to the entire disregard and exclusion of surgery, when resection of the thyroid and iodine are two agencies which give almost absolute, if not complete, control over the exophthalmic goiter complex, and thyroidectomy alone gives practically complete control over the adenomatous goiter complex, has again become a question. In my opinion this may well be thoroughly considered at the present time. A thorough review and analysis of the situation should be the answer. Although it is true that in many cases there is improvement following radiotherapy in hyperthyroidism of the exophthalmic goiter complex, in some instances even resulting in apparent cure, it is impossible to prove whether this improvement is the result of the treatments or of spontaneous remission characteristic of the exophthalmic goiter complex. At any rate the improvements are not uniform.

What do the best available reliable statistics and end-results tell us regarding x-ray and surgical treatment? Means and Holmes, of the Massachusetts general hospital, showed that after a lapse of three to five years good results were obtained in about forty per cent of the cases of exophthalmic goiter, in which x-ray treatment had been given. This percentage is, of course, too low to warrant any serious consideration of this treatment routinely. Furthermore, they found that the results in cases of adenomatous goiter with hyperthyroidism treated by x-ray were not as good as those in cases of exophthalmic goiter. Moreover, after a study of their cases they were unable to foretell which patients would receive benefit and which would not. Working at Mt. Sinai hospital, Kessel, Lieb and Hyman published results in cases of exophthalmic goiter untreated by x-ray which were almost as good as those reported by Means and Holmes after the use of the x-ray.

In certain countries of Europe radiotherapy has been extensively employed in hyperthyroidism and many of the radiologists who have reported on the subject are able men with sound clinical training. However, the difficulty here is that the classification of thyroid conditions varies so much in the different countries that it is extremely difficult and confusing to compare notes. Not long ago I heard one of the leading pathologists of Europe lecture on thyroid diseases and his classification was most hopelessly confusing.

In America there are a few radiologists who do know goiter as well as any of the very best clinicians. The remainder do not know enough about goiter clinically to talk either authoritatively or intelligently. It is, therefore, difficult to comprehend how they can speak accurately or intelligently about end-results.

As between surgical treatment of hyperthyroidism by low grade surgery and the treatment by the average radiologist there is not much choice. Thyroid surgery demands a high grade work. We are not even sure about any definite benefit derived from the use of x-ray treatment of goiter, but one thing we are certain of is that the end-results from its use are not good enough to warrant its employment routinely. Furthermore, patients treated by x-ray lose valuable time, when they could be operated on successfully before they come to surgery as helpless invalids with cardiac and kidney damage. From an economical standpoint x-ray therapy is more expensive in the long run than surgery. It is dangerous in that it brings greater risks to surgery.

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* Read before the Thirty-fourth Annual Meeting of Idaho State Medical Association, Sandpoint, Ida., Sept. 2-4, 1926.

Results of surgery in cases of hyperthyroidism are too good to be given up for the indefinite results of x-ray. The present mortality in high grade surgery of the thyroid is less than one per cent and the end-results after a lapse of five years of a large series of cases show that there are eighty per cent of cure in cases of exophthalmic goiter and ninety per cent of cure in cases of adenomatous goiter with hyperthyroidism,* as against a forty per cent questionable cure with x-ray in cases of the exophthalmic goiter complex with even a smaller percentage in cases of adenomatous goiter with hyperthyroidism.

In my opinion x-ray treatment may be a valuable aid in the preparation of patients with exophthalmic goiter for surgery, but nothing more and Lugol's solution in all probability will accomplish fully as much. Before the discovery of the extreme value of Lugol's solution in controlling the hyperthyroid crises, the surgeon was forced to content himself in doing ligations and perhaps a lobectomy or operations in stages. In those days, to be sure, radiotherapy was as effective as surgery. At present good surgery plus Lugol's gives practically one hundred per cent clinical control of hyperthyroidism.

The recent improvement in the results of surgery in goiter is due in a great measure to the fact that patients with exophthalmic goiter and hyperthyroid adenoma are coming to surgery earlier in the course of the disease before the development of visceral changes, a credit not only due to better clinicians and diagnosticians but to better surgery as well. Radiologists are altogether too optimistic and only when they can present reliable statistics and end-results checked by reliable internists over a three to five year period can we believe them, admitting that they are honest and sincere in their beliefs, and even granting that they do know goiter clinically.

CONCLUSIONS

1. End-results of surgery of the thyroid after a five year period are so much better, as far as clinical control of hyperthyroidism is concerned, than those of radiotherapy that we cannot consider the latter seriously as far as routine treatment is concerned.

2. The objections to x-ray therapy are the expense, the loss of valuable time and, therefore, the danger of bringing greater risks to surgery because of the development of the visceral changes.

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* Mayo Clinic statistics.

INFECTIONS OF ACCESSORY NASAL SINUSES

AS THE CAUSE OF CHRONIC NONTUBERCULOUS BRONCHITIS

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In studying the textbook literature on chronic bronchitis and bronchiectasis, one cannot help but be struck with the total absence of mention of foci of infection in the upper respiratory tract as a perpetuating cause of the pulmonary trouble. In 1914 St. Clair Thorreson gave passing reference to sinus infection as a possible explanation of the chronicity of bronchitis. Such recent works as the Oxford System of Medicine, Nelson's System of Medicine, and Tice's System of Medicine, make no mention of the sinuses in connection with chronic bronchitis. McPherson, in Osler's System of Medicine, mentions brain abscess as a relatively frequent complication of bronchiectasis. The question immediately arises that, since brain abscess is also a frequent complication of sinus disease, do not the bronchiectatics, in whom this complication is found, develop it, not from their bronchi but from an unrecognized sinusitis.

The French army officers were among the first to stress the importance of careful examination of the nose and paranasal sinuses in cases of chronic productive cough not due to tuberculosis. In 1916, Rist called attention to the association of chronic bronchitis with disease of the nasal sinuses and compared the respiratory tract to the urinary tract, cystitis being frequently the consequence of renal infection. Sargent reported that incorrect diagnosis had been made in one-third of the supposedly tuberculous soldiers in the French army, and that most of these mistakes were in men who had a chronic bronchitis associated with infection of the nasal sinuses.

Dunham and Skavlem, in a radiologic study of 389 cases referred as tuberculous, found 28 per cent to be suffering from other foci of infection, and among these nontuberculous cases the primary focus was, in the vast majority of instances, in the head. So constant has been this observation that, in every case presenting a nontuberculous lung lesion, they have radiographed the accessory sinuses. They state that "some are so dogmatic as to state that every case of bronchiectasis is accompanied by sinus disease," but they are not willing to go so far; yet of the twenty-five cases of bronchiectasis in their series, all had sinus disease and all but six of their forty-two cases of apical catarrh were accompanied with sinus disease, three of which were due to tonsil infection and three to dental sepsis.

The fact that nontuberculous pulmonary disease and infection of the sinuses are so frequently associated does not prove that the one is a sequel of the other. It might be contended that the sinus disease develops as a result of the bronchial infection. However, there is no ready route from the lungs to the sinuses and the rapidity with which early cases get well after cure of the sinus disease also argues against this sequence. To those who are inclined to say that the large quantities of secretion coughed up from the bronchi might readily infect the sinuses, one might cite the similar condition in pulmonary tuberculosis without the same coincidence existing.

The existence of chronic bronchitis and sinus infection in so large a number of cases must be explained on other grounds than coincidence. Then what is the pathway by which the infection goes from the sinuses to the chest? Is it by lymphatic drainage, by blood stream or by inhalation?

Mullin has carried out some extensive experiments in an effort to solve this problem and I cannot do better than quote his conclusions.

1. Lymphatic absorption from the antrum, whether of bacteria or of inert substance, is by way of the submaxillary and internal jugular nodes to the lymph duct, the great veins, the right side of the heart and the lungs. Substances reaching the lungs in the pulmonary circulation may, of course, pass on to the left side of the heart and the general circulation.

2. Absorption from the tissues of the face in the antrum region and from the palate is by the same route.

3. The subparotid and retrosternal nodes may sometimes be reached by absorption from the antrum and neighboring tissues.

4. Absorption from the frontal sinus seems to follow the same course as from the antrum.

5. There is little if any absorption from the normal uninjured mucosa of the nasal fossæ.

6. Lymphatic drainage is widely regional, and anastomosis from node to node and from side to side is free, so that it is not always possible to fix on a single node or group of nodes as the certain point of election of metastasis from a given region.

7. In respect of the lymphatic function as well as anatomically, the lining membrane of the nasal fossæ and accessory sinuses is a continuous whole, and infection at one point can probably be conveyed by lymphatics to practically any other point.

We have not found any direct lymphatic communication from the plexuses and nodes of the head and neck to the lungs and pleura. Theoretically, on the basis of development, connections may exist and may even occasionally function. But the obvious, easily demonstrated and insufficiently emphasized course is down the deep cervical chain and by ducts and veins to the right heart, thence directly to any or all parts of the lungs.

If the infection is by lymphatic absorption, why is it we do not have more universal enlargement of the cervical lymph nodes? Mullin cites a case, in which the enlarged nodes disappeared after removal of the tonsils but the bronchitis persisted until the sinuses were drained. We have seen acute swelling of the parotid gland occur twice during acute exacerbation of a chronic antrum in a boy of ten, but cervical adenopathy is not usual in these cases as it is in tonsil infection. It also seems to us that if the route of infection is as above, we would more frequently have associated manifestations in other parts of the body.

It is true that the lungs will bear the first brunt of infection, passed to the right side of the heart, but we cannot understand why the lesions are confined to the peribronchial tissues and the basal nodes and not more widely disseminated throughout the lungs.

To demonstrate the possibility of extension by inhalation a light fluid, such as India ink, was allowed to flow into the noses of animals during quiet respiration. It was found that they were readily inhaled, producing effects in the lungs, the quick development and massive character of which, in the absence of any signs of absorption along the cervical or mesenteric route, gave convincing evidence that they were produced by pure inhalation. Microscopic sections of the lungs showed carbon packed in the alveoli, both free and in the large mononuclear or alveolar cells. The behavior of these cells in this instance, as well as their proliferation in acute and tuberculous pneumonia, emphasizes their close relationship to the fixed endothelial cells and the large mononuclear leucocytes. They seem readily to engulf particles which arrive on their surface and to proliferate under the stimulus. They then become detached, either to be cast off in the expectoration or taken up and carried along the course of lymphatic absorption. The cells of the upper respiratory membranes, on the other hand, do not appear to be phagocytic, but rather to throw off foreign particles by means of their secretion.

One c.c. of India ink instilled into the nostril of a rabbit will produce pigmentation of the alveoli and the peribronchial nodes in less than twenty-four hours. The facility with which liquid substances can reach the larynx and trachea in the human is easily demonstrated by the instillation method of producing analgesia in tuberculous laryngitis. If a light oil is pigmented and instilled slowly into one or both nostrils while the subject breathes slowly and deeply through the mouth, one can with the mirror see the pigmentation of the larynx and upper trachea in about twenty minutes.

Thus we have two routes which connect the accessory sinuses with the lungs and bronchi, the lymphatic or circulatory route, which can function even in the case of a sinus which does not discharge into the nose, and the inhalation or bronchial route, which is open to any substance reaching the nasal fossæ from the accessory sinuses or elsewhere. Mullen is inclined to believe that the lymphatic route is the one functioning in cases of so-called nonsuppurative or hyperplastic sinusitis. But Sluder has drawn attention to the fact that the absence of drainage in nonsuppurative sinusitis is more apparent than real, due to the fact that the pathologic exudate or secretion of these sinuses is a thin mucopurulent material very difficult to see in the nose or throat. It has a tendency to spread in a thin layer and cling to the membrane.

Acute bronchitis and bronchopneumonia as well, though to a less degree, are usually phases of an infection which involves the whole upper respiratory mucous membrane, often including the sinuses. That sinus infection and acute bronchitis may develop simultaneously is hardly to be questioned, and the tendency is for the bronchial infection to get well unless constantly fed and fostered by a chronic sinus infection. Many of these cases are mistaken and treated for pulmonary tuberculosis, and the majority of them consult the chest man or the internist first.

If the patient's history of no nose trouble alone is accepted without a most thorough investigation of the sinuses, then the diagnosis will not be made and the best interests of the patient will not be served. A careful search for sinus disease in the early stages of a persistent bronchitis, especially in children, will clear many cases, but it is very evident that treatment of the sinus disease in well developed bronchiectasis will not effect a cure. Careful inspection of the history of these cases shows that the majority of them started with nose trouble and a cough when children; that the advanced cases have pansinusitis; that the bacterial flora from the sinuses and the sputum is the same. Those who have only slight sinus involvement, thereby lessening their absorption, do get results by treatment, but a goodly number have no symptoms or clinical evidence of sinus disease as usually manifested by discharge or headache, especially when the maxillary sinuses alone are involved. In suspected disease of the antrum, where lavage does not return pus, we feel justified in resorting to direct inspection through an opening in the canine fossa.

We are sure that many of these cases with indefinite symptoms are overlooked. While the incidence of chronic bronchitis and paranasal sinus disease may appear at any age, it is interesting to note from the history how frequently it dates back to early childhood. A few years ago sinus infection was considered rare in early childhood. As our examinations became more careful and our knowledge increases, sinus disease is diagnosed much earlier and more frequently.

It was formerly supposed that the paranasal sinuses were rudimentary at birth and poorly developed in early childhood, but the anatomic studies of Onodi, Schaeffer and Davis have proved that some of the cells are often fairly well developed at birth. As there is no law governing the size and shape of the sinuses, neither is there any fixed relation between the age and extent of development. All of the sinuses may reach an advanced stage of development very early in life, while some of them may never develop or may remain rudimentary throughout the entire life of the individual.

With this consideration of the probable routes of infection and the possibility of sinus infection in childhood, what have we to offer as the result of treatment? What practical application can we make of these theories based on clinical experience? If sinus infection causes bronchitis and bronchiectasis, what will happen to the bronchitis and bronchiectasis if the sinus disease is cured?

Our experience consists of a series of 196 cases referred as chronic nontuberculous bronchitis. In all but 6 of these we were able to demonstrate a definite chronic sinus disease. Of the 190 positive sinus cases, 164 have had their sinuses operated upon or have been treated a sufficient length of time to judge with some accuracy the effect that treatment of the sinuses has had upon the bronchitis. The ages ranged from four to seventy-one years, the great majority being between the ages of twenty and fifty. The shortest duration of the bronchitis was seven months, the longest eighteen years, and this in a young woman twenty-four years of age.

For the sake of discussion we will divide these cases into three classes:

1. Those in which there is a slight chronic catarrhal discharge from the nose and nasopharynx

and an irritative cough, occasional expectoration with slight variable signs, especially clusters of moist rales in the base of one or both lungs.

2. Those who have frequent exacerbations of a latent sinus disease, followed by acute diffuse bronchitis going on to the chronic stage.

3. Those who have definite purulent discharge from the nose, perhaps with odor and the typical picture of bronchiectasis, unloading large quantities of purulent secretion at each postural drainage.

In most, if not all of these cases, I believe that the relation between the nasal and bronchial lesions is a definite causal one, and that close cooperation between the chest man and the rhinologist will usually reveal the accessory sinuses as the seat of an established infection and the source of the bronchial disease.

Sure as we feel of the causal relationship between sinus and bronchi in these cases, we do not feel that we are in a position to be dogmatic. Also other parts than the sinuses may easily be the source of infection of the lung. The route from the teeth as well as from the tonsil takes the same general direction. However, what we are chiefly concerned with here is the class of cases, in which we can prove a definite sinusitis to bear the weight of suspicion as source of the bronchial disease.

The following case histories will best illustrate the character and the end-results of the cases we have been dealing with:

Case 1. W. H., age 7, had been operated upon three times for tonsils and adenoids before coming to us in May, 1921. His first year at school had been ruined on account of a constant cough, attacks of acute otitis media and acute exacerbations of bronchitis with fever.

His general condition was good except that he was underweight; chest examination negative except for a few moist rales at the base. Nose examination revealed a bilateral antrum infection. After ten days' treatment by puncture and lavage his antrum and nose were free from pus and he had ceased to cough. We had reports from him during the following two winters. They were uneventful save for an occasional cold of short duration.

Case 2. M. B., a girl, age 10, referred for adenoid and tonsil operation in 1915. There was a history of a productive cough since the age of three years. There was no evidence of tuberculosis. The child had a large adenoid, septic tonsils and pus in her nose. The parents would not consent to a tonsillectomy, but allowed me to remove the adenoid.

Several months later they reported that the cough was no better and we did not see her again until eight years later, in January, 1923. She had persistent drainage from her nose, was coughing and expectorating from 25 to 30 c.c. per day. She was having great difficulty in getting her education on account of repeated exacerbations of her bronchitis, and was considering abandoning her efforts to go to college.

Radiograms of her chest showed considerable peribronchial thickening, more pronounced toward the base, and one or two calcified nodes at the hilum. There was no evidence of tuberculosis on physical examination or in the plates. The sinus diagnosis was a purulent left antrum with probable involvement of both ethmoids, and an obstructing septum. The septum was resected and the antrum operated upon.

There was immediate cessation of her cough and expectoration. This lasted for six weeks, when she returned with an acute rhinitis and some cough. This cleared up in about three weeks. During the following winter she had occasional colds of short duration and always some cough, but she did not raise enough sputum to measure. Her recovery was complete during the following summer. She has remained well.

Case 3. C. B., age 20, a well nourished young woman with a sallow complexion and a rather dull expression, came to us in June, 1921. She states that she has had nasal drainage since childhood and cannot remember when she did not cough. Has had bronchopneumonia twice. Operated upon for removal of adenoids and tonsils. Antrums washed and polyps removed several times. Has been under treatment for tuberculosis and for gastric ulcer.

Chest examination: Physical examination; no impairment to percussion; breathing over both sides of back weak vesicular type; from the angle of the scapula to the base sibilant, sonorous and large resonating rales. Radiograms show marked increase in visibility of the bronchovesicular tree in both lower quadrants. Stomach examination showed no evidence of ulcer.

Diagnosis: Nontuberculous bronchitis and some bronchiectasis. Examination of the nose showed the ethmoid area a mass of polypoid granulation tissue with pus draining anterior and posterior.

In the radiograms of the sinuses no ethmoid cells could be seen; the labyrinth presented a uniform haziness. Both antra were cloudy.

There was no pus from either antrum from puncture and lavage.

Diagnosis: Pansinusitis with the possible exception of the frontals.

She was operated upon for pansinusitis in two stages, in June, 1921. The operative findings confirmed the preoperative diagnosis. The ethmoid space was a mass of polypoid granulation tissue; the antra, frontal and sphenoid sinuses were lined with a very thick, soft, fungoid membrane and contained pus.

The winter of 1921-22 was a great improvement over the previous ones. She states that the winter of 1922-23 was the most comfortable one in her recollection. Previous to operation she was expectorating 50 to 60 c.c. of pus per day. She still coughs and expectorates from 10 to 15 c.c. per day, but is able to continue at her work without interruption from acute exacerbations of bronchitis.

Sinus diagnosis in the cases cited was easily made, but our series includes a number of cases in which the indication for treatment of the sinuses was not so obvious, as an example of which we offer the following case:

Case 4. P. B., a school girl, age 15 years, was referred by an internist with the request that we look for the cause of a chronic bronchitis. She had some cough during the day but raised very little sputum. Her nights were a constant succession of attacks of coughing that did not wake her but were very annoying to those occupying adjoining rooms. She was languid and tired.

Physical examination was negative. Radiograms of the chest showed a very marked peribronchial thickening at the bases. Examination of the nose was negative. Radiograms of the sinuses showed some increase in density of the right antrum as compared with the left. There were remnants of tonsils and adenoids, and these were removed. The right antrum was washed at the time of the adenoid and tonsil operation with negative result.

Following this operation there was no improvement. In fact, as weeks went by, the cough grew more troublesome. During a period of nine months the nose was repeatedly examined and the antrums washed with negative findings. Finally, on the basis of the radiographic evidence and our belief in the association of sinus infection and bronchitis, the right antrum was opened. There was no gross pus, only a little gray mucus here and there on the walls of the antrum that showed a definite thickening throughout. Two weeks after the operation the night cough had wholly disappeared. There was a little cough during the day. It is now two years since her operation and she is entirely free from trouble.

We cannot emphasize too strongly the fact that chronic bronchitis usually begins in childhood, coincident with sinus infection. Dean thinks that approximately 80 per cent of sinus infections in children will be cured by removal of tonsils and adenoids. Brennemann, however, says that removing the tonsils as a prophylactic against recurrent and subacute bronchitis in children of three or four years has been very disappointing in his experience; and adds, "sinus infection may play an important part and should be looked after if one can find an interested and experienced otolaryngologist."

It has become our custom to do intranasal puncture and lavage of the antrums while the child is under ether for removal of the tonsils and adenoids, in all the cases in which we suspect sinus involvement. This serves two purposes. If the antra are found to be diseased, it is usually possible to repeat the washing under local anesthesia, when the removal of the tonsils and adenoids does not end the infection. If the antra are found to be free from infection and the evidence of sinus infection continues after the operation, we have eliminated them and can direct our attention to the other cells.

It is another part of our routine to ask the parents of children operated on for adenoids and tonsils to bring them back to us if they do not improve as they should. With a negative report from the pediatrist, so far as systemic conditions are concerned, we probably have chronic sinus disease to deal with if the child continues listless and under weight, has poor color, repeated colds or persistent cough.

It can justly be urged that cure of the sinus disease does not always result in cure of the diseased lung. This depends upon how far the secondary lesion has progressed. If the bronchial infection is in an incipient stage, cure of the sinus, thereby removing the source of bronchial reinfection, will often result in complete recovery. While the results in those cases falling in class three are disappointing from the lung standpoint, they are by no means negative for the individual, as will be seen by the cases cited above.

In the series of 164 cases here reported the results have been uniformly good and in many cases brilliant. The extent of relief depends upon the degree of pathologic changes in the lungs and upon our ability to cure or control the infection in the sinuses.

A number of our cases have been cured by conservative treatment, such as antrum lavage. This is particularly true in children; but the great majority had one or more operations upon the sinuses, and the best and quickest results have followed surgery along radical lines.

PREOPERATIVE AND POSTOPERATIVE CARE OF CATARACT CASES*

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The care of operative cases before and after the operation has much to do with the final outcome. An operation, especially a major one, will have a much more favorable result regardless of the fineness of the technic with which it is done, provided it is not an emergency operation, if the preparation, that is, getting of the patient in condition for the ordeal, is not lightly considered. The aftercare is usually more effectively carried out, but too often the main interest centers in the operation itself. Preoperative and postoperative care is a very vital factor in cataract cases because neglect of even the minutest detail may mean the loss of one or both eyes, the operated one through accident or infection and the other through sympathetic ophthalmia. The successful outcome of a cataract operation is more dependent on the management of the case outside of the operation than on the operation itself.

Preoperative Management. The first thing to be considered is the general health of the patient. With what systemic disease, if any, is he suffering? About the first system we investigate is the genitourinary. Are there any signs or symptoms of diabetes, nephritis or other urinary disturbances, such as frequency, difficulty of urination, etc.? If any of these conditions prevail, they must be corrected as much as possible or at least reduced to a minimum and kept under observation by a specialist until the patient is sufficiently recovered to warrant no ill effects from them. Diet, insulin, fluid intake, etc., play a great part in regulating these conditions. The patient must be warned regarding the influence they may have upon the final results.

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The alimentary system is probably the next most important to check up on. A patient will seldom say anything about being troubled with constipation, flatulence, indigestion, pyrosis, gallbladder attacks and the like. One or more of these conditions is very troublesome at times and may be the means of undoing an otherwise uneventful and splendid recovery. If a patient is suffering more or less with any of them, the operative procedure must be postponed until they are corrected or under control. He should see his physician for advice and treatment concerning these things before being operated upon.

It may be asked, how can the above conditions affect the eye? The answer is, they cause restlessness, toxemia, pain, straining, belching, perhaps nausea and vomiting, headache, etc. Under this same heading would come the condition of the teeth. The dentist must be consulted in case of dental caries, pyorrhea, crowns and possible apical abscesses. An infected tooth may cause a prolonged recovery or perhaps the loss of an eye.

The respiratory system comes in for its share as a trouble-maker, especially if the patient is suffering from asthma, chronic bronchitis, pharyngitis, tuberculosis, bronchiectasis, etc., where there is difficulty of respiration. The prone position is dangerous and impossible, and where coughing or sneezing are frequent. Operation in such cases must be performed with reluctance.

Of lesser importance are heart and blood conditions, except the blood pressure. Rest in bed is usually beneficial in most heart conditions and also in cases of high blood pressure but in these cases the latter must be brought down to as near normal as possible in order to avoid primary expulsive hemorrhages. The blood pressure should be taken in every cataract case that comes to operation. Anemic states do not influence the procedure to any appreciable extent and is not considered a contraindication for operation unless it is of a pernicious or of a very extreme secondary type. A routine Wassermann would no doubt be a wise part of every examination because a positive reaction is sometimes found where least expected.

Of considerable importance in every cataract case is the condition of the nervous system. The surgeon must know something of the nervous make up of the patient. Quite often the bandaging of both eyes for only a few hours after operation is the cause of hallucinations and mania of a greater or less degree with resulting strenuous bodily movements and severe strain on the eye. Nervousness should be prevented or at least relieved if possible by reassurance and also by sedatives, as it may cause undue moving and restlessness.

There are many more or less localized conditions to investigate, such as skin diseases—eczema, urticaria, scabies, etc., which are very annoying and must be cleared up before any operative procedure can be undertaken.

The eyeball and surrounding tissues must be in the best condition possible. Conjunctivitis, blepharitis, dacryocystitis and stenosis, and keratitis are contraindications to cataract extraction. The eye must be free from them before the extraction can be considered and accomplished with the greatest degree of safety.

The immediate preoperative care consists of the patient entering the hospital in the afternoon prior to the operation. A special night and day nurse should be engaged for two nights and three days, commencing the morning of the operation. Nurses specializing in cataract patients must be warned against moving, feeding or talking with them any more than is absolutely necessary for the first three days. There is little else to do outside of watching them carefully to avoid injuring themselves by moving about, fussing with the dressings, etc.

The patient is given a regular dose of the cathartic to which he is accustomed or one whose strength depends upon the ease with which his bowels are influenced. If necessary, an enema is given in the morning. A light diet is ordered for the evening with no breakfast. At 8:00 p.m. he is given veronal, gr. 5, in a glass of hot milk.

One drop of 1 per cent solution of mercurochrome is instilled into the conjunctival sac soon after entering the hospital, again in about three hours and in the morning before going to the operating room. This is a prophylactic against infection from the conjunctiva and the tear sac. In the evening and also one hour before operation a drop of a 1 per cent solution of atropin sulphate is instilled into the eye. This serves a three-fold purpose. It dilates the pupil so that the capsulotomy and extraction are easier; it is thought to be somewhat analgesic, hence aiding in making the operation less painful; and it tends to prevent iritis during convalescence.

The operation is best done in the morning after the patient has had a restful night under the influence of a mild sedative. Beginning one-half hour before operation one drop of a 5 per cent solution of cocaine is instilled into the conjunctival culdesac every five minutes until time for operation. No morphine before operation, as there is danger of producing vomiting with its attendant dangers to the operated eyeball.

Postoperative Management. If the patient is operated upon in his bed, as is done in some eye hospitals, there need be no fear of complications resulting from transferring him from the operating table to his bed. This is much the simplest and safest procedure, as a great deal of moving and straining at the most inopportune time is eliminated. However, if the patient is operated on in the surgery, on his arrival in his room he is warned of the danger of strains and movements, and is told to relax and let himself be lifted without help on his part, one attendant taking care that his head is not moved unnecessarily. He is placed on his back with no pillow or a thin one. He should not be between two windows or between a door and window, avoiding drafts. He is not allowed to talk. He is put on triple bromides, gr. 15-20, every three hours while awake in the morning before operation, and this is continued until after the first dressing, three days later. He is kept very quiet for six or eight hours and then, if he is too uncomfortable and restless, his knees can be raised and supported on a pillow. This may give him considerable rest for two or three hours. Later he may be turned gently on his side opposite the operated side and braced with pillows.

If he shows signs of mental disturbance, his unoperated eye may have to be uncovered and he may be given a rather strong sedative, as veronal, gr. 5-10, chloral hydrate, gr. 15-20, trional, gr. 10-12, sulphonal, gr. 20-30. Occasionally a more powerful hypnotic is necessary, as scopolamine hydrobromide, gr. 1/150, or morphine hydrochloride, gr. 1/4. If the mental symptoms are too pronounced and nothing else seems to quiet the patient, the powerful sedative hyoscine hydrobromide, gr. 1/200-1/75, given with great care hypodermically may be a last resort. Rarely a straight-jacket may have to be used. If there is any indication that he may cause some difficulty from mental disturbance, he had best be put into a room with barred windows and carefully watched by a special nurse.

The patient should be given liquid diet for the first two days; then it can be increased to include jello, custard, milk toast, poached egg, soup, etc. About the fourth day he can be given semisolid diet and on the sixth or seventh day regular diet. Catharsis should be postponed until the evening after the first dressing. Often a patient feels better and is less restless if he is given blue mass or blue pill, gr. 2-4, every evening while in the hospital.

Clothing. In this particular many times we disregard the personal habits of the patient and subject him to changes which are dangerous in that he may take a severe cold which will delay his recovery, and make his convalescence long continued and detrimental to the success of the operation. If a middle-aged or elderly person is used to sleeping under certain conditions not exactly compatible with the rules of the hospital or with our idea of proper customs, such as sleeping in underclothing or with more covers than usual or with more than one pillow or he has any other peculiar notions, it is better to let him be under as normal conditions for him as possible, if they are not too extreme and are not really harmful. Let the patient feel as much at home as possible and free from excitement or worry while in the hospital, because this is a fearful thing for many people of cataract age. If the hospital is made homelike and not too much of an institution, he will have a much easier and more normal recovery.

On about the third day after operation, if there have been no complications, the patient may have a low back-rest and on the fourth or fifth day he may sit in a chair for one hour in the forenoon and one hour in the afternoon. With help he may go to the toilet on the fourth day.

At the first dressing, he is told to refrain from squeezing or sneezing because of the danger of breaking the wound open. If he has a sensation of sneezing coming on, he is told to pinch or rub his upper lip rather firmly and this will stop the impulse. Great care must be taken by the surgeon in removing the dressings. If a great deal of adhesive tape has been used as part of the shield, this may be removed with the aid of benzine or ether, or the unattached parts may be cut and the stuck ends be removed later when the wound is more firmly healed and squeezing of the lids is not so dangerous. After the patches have been removed, the eyes (unoperated one first) are gently washed externally with small, warm, rather firmly rolled cotton wipes (moistened with boric or 1/5000 bichloride solution) with clean or gloved hands, or better still with a sterile tissue forceps and loose moist cotton which has been grasped and wound on the end of the forceps. This is easily done and guarantees against the hands coming in contact with the eye in any way.

After the lids are clean the patient is asked to gently open both eyes, care being taken that no light is shining directly into them. The surgeon may help him by gently placing his thumb rather high on the upper lid with gentle pressure and at the same time moving the thumb upwards. Any secretion that may be adhering to the lids or lashes is washed away. Before the eye is opened, note is made of its appearance, swelling, redness, ecchymosis, etc. After the lids are opened a rather rapid observation will reveal the condition of the globe, congestion (conjunctival and ciliary) or reaction, whether or not the anterior chamber is clear, the pupil dilated or contracted, the pillars free or incarcerated in the wound, the wound closed, the conjunctival flap, if there is one, in place and any other conditions of interest.

A drop of 1/2 per cent mercurochrome is instilled, together with a little 1 per cent atropin sulphate ointment and some bichloride of mercury salve, 1/5000, is put over the lashes externally after they have been closed gently. A sterile patch is held in place by two narrow strips of adhesive tape, the shield is replaced and retained by adhesive or strings tied around the head. If the operated eye is in satisfactory condition, the other is left open.

The dressing is done every day and on about the tenth to twelfth a perforated aluminum shield is used instead of a dressing. On the twelfth to fourteenth day the patient is allowed to go home with instructions to avoid drafts, straining or anything else that may be harmful to the eye. Under normal conditions a glass is fitted in three or four weeks for temporary use. Three to six months later a permanent lens may be given.

Intracranial Complications of Fracture of Skull Involving Frontal Sinus. Sixteen cases of fractures of the skull involving the frontal sinus are reviewed by Frank R. Teachenor, Kansas City, Mo. (Journal A. M. A., March 26, 1927). He divides these cases into two series of eight cases each. In the first series there were three operations, but they were done after the onset of the complications. In the second series prompt operation was done in each case as a preventive measure. In the first series of eight patients, there were seven deaths. Two died from brain injury accompanying fracture; one of intradural frontal abscess; one of extradural abscess and meningitis, and three of meningitis. In one case of cerebrospinal rhinorrhea the patient recovered. In the second series of eight patients, there were three deaths. Two died from brain injury accompanying fracture, and one of meningitis; five recovered without intracranial complications. In the first series the gross mortality was 87.5 per cent; 25 per cent was from brain injury accompanying the fracture of the skull, and 67.5 per cent resulted from intracranial infection; 12.5 per cent recovered. In the second series all the patients had prompt frontal sinus drainage. The gross mortality was 37.5 per cent; 25 per cent was from brain injuries accompanying the fracture of the skull, and 12.5 per cent from intracranial infection. The one death from meningitis was the result of delayed operation. The death from meningitis twenty-nine hours after injury, and the failure to save the patient by operation thirty-six hours after injury, illustrate the necessity of early diagnosis and operation. In addition to drainage of the sinus, a free exit must be provided for air forced into the sinus from the nasal cavity.

CORNEAL ULCERS*

AS THEY COME TO THE MAN IN GENERAL PRACTICE

Ray H. Fisher, B.S., M.D.
RIGBY, IDA.

A discussion of this subject at this time might not be the best reading for men like Jackson or De Schweinitz, great masters of ophthalmology, but to men in general practice who are still out on the frontier a few remarks on this common and serious eye condition may not be amiss. One is forced to treat many of these cases for two reasons: (1). The patient is so far from the specialists of the city that he cannot afford the time and money to go to them. (2). You have taken care of him and his family for so long and for so many ailments that he is loath to go elsewhere until his eye condition becomes more or less serious and you refuse longer to care for it.

For the last ten years I have been doing some special eye work, and yet have remained in general practice sufficiently to know about what the needs of the average practitioner are. Corneal ulcers are fairly common, if we include the milder types, and, as I said before, are often more or less serious, especially if unintelligently managed. There are numerous kinds due to many causes. The ones seen by us for the most part are traumatic. There are also those caused by malnutrition, and those due to contagious diseases like smallpox and chickenpox. A further large group is due to focal infection, in which diseased tonsils, sinuses and infected teeth play the chief role.

It is a common thing for patients to consult you with foreign bodies in the cornea. You will find the removal of these bodies listed as a separate and distinct operation in the fee schedules of the industrial accident board. When a patient gets something in his eye he hurries to get it out, especially if it is imbedded in the cornea. He has learned that he cannot get it out at home because the cornea is sensitive and the foreign body is small and hard to see or move. In the office the procedure is comparatively simple, provided you have good light and the patient is in good position.

Fifteen dollars will buy a suitable specialist's goose neck lamp, which every medical man should have. This is important for the removal of these foreign bodies. Also if you can afford fifty dollars for a specialist's chair, it is worth far more than that, even to the country practitioner. The object is to have the patient in a semiprone position, at ease and so placed that you may bend over him. Cocaine is imperative. Instill a liberal amount of 4 per cent solution. If you desire to use a lid retractor to give free access to the corneal field, do so, but this procedure is usually not necessary.

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* Read before a Meeting of Upper Snake River Valley Medical Association, St. Anthony, Ida., Jan., 1927.

You are now ready to remove the foreign body. I assume that you have cleansed your hands well, for this is a surgical procedure of importance and responsibility and only aseptic technic should prevail, lest a traumatic corneal ulcer, the very thing we are hoping to avoid, will be the result. Many do not have a suitable instrument for this delicate piece of surgery. Nine-tenths of the eye-spuds and instruments sold for this purpose are useless, and many of them are positively harmful. They are clumsy, too wide and too thick on the point, and are often too rough. They will do nicely for a foreign body lying just on the corneal surface. However, for the imbedded body a fine pointed instrument is best, like a cystotome used in cataract operations.

While standing over the patient, have him move the eyeball until the foreign body is in the most accessible position. Then tell him to keep his vision fixed on the object he is looking at, and with the instrument directed toward the corneal margin and away from the pupil, lift the body out, doing as little damage to the cornea as possible. There are many deeply imbedded bodies which are difficult to remove and much trauma will be done to the cornea during the procedure. It may even become perforated, if the operator is not careful. That is why I say a good light, proper position for the patient and operator, sufficient cocaine and proper instrument are important.

If you have had difficulty and can see you have caused quite a little abrasion to the cornea, regard the case as a potential traumatic ulcer and begin treatment at once. Instill atropine, 1 per cent solution. Always explain the effect of both cocaine and atropine to the patient so he will not think he is going blind because of his failure temporarily to accommodate. Follow the atropine with 15 per cent fresh argyrol solution and cover the eye with a hard eye shield. Do not use cotton and tape, as the eye needs rest and these only irritate. Use instead the shield of which the real hard kind is the only one of merit, its advantage being that it does not press upon the eye or limit its movements. This is one place where argyrol is of merit, i.e., in an acute or likely acute inflammation. It is of no value in most eye inflammations of a subacute or more chronic nature. Have the argyrol instilled every two hours for two or three days.

By this time the danger of ulceration is usually over. The denuded corneal tissue is rapidly replaced and there are no untoward effects. The effect of the atropine has now worn off and vision is normal.

For these apparently little jobs demand a decent fee. Dignify surgery, and do not be afraid to put a respectable premium on your training and skill. Remember this is a procedure the layman or the chiropractor cannot do. A hundred rubs on the back or the "backside" by a chiropractor will not remove a foreign body from the cornea.

Suppose that, due to the foreign body or other form of trauma, there exists a corneal ulcer, when you first see the patient. The advanced ulcers are of course readily seen. The pain which is worse at night, the redness of the sclera, photophobia, blurred vision, etc. make the diagnosis easy. The small beginning ulcers are harder to detect. However, with good daylight, the light from the specialist's bulb or the reflected light from the mirror of the ophthalmoscope, a tiny, gray, filmy spot or patch is seen. No matter how small the ulcer nor how innocent it may seem, then is the time for prompt and efficient service on your part in order that this ulcer may not become serious, spread widely on the cornea and impair vision from the resulting scar. In every ulcer of any consequence some scarring will result and vision be more or less impaired.

The most favorable prognosis will be in traumatic ulcers, the least favorable in smallpox, i.e., where a pock has formed on the globe of the eye and especially directly on the cornea. Here vision is almost sure to be lost, because the infection in so virulent and the ulcer of such magnitude, that the resulting leukoma makes it impossible to retain any useful vision. I have seen only two smallpox ulcers, in both of which the eyes were well cared for, but sight was subsequently practically lost.

Of importance are focal infections, especially where there is a history of recurrent ulcers. Careful search should be made of the teeth, tonsils, sinuses, etc., and every suspicious focus eliminated as soon as possible. Malnutrition should be corrected immediately as it often delays healing.

What is the prognosis? The patient, especially an intelligent one, is much interested in this. You can assure him that very likely the ulcer will heal in a varying length of time, from a few days to three or four weeks, depending upon the severity of the case, and the kind of care given. Vision will be disturbed in proportion to the extent of the remaining scar and its location. The more nearly central the scar the greater the disturbance of vision. Also if the scar is at the lower margin of the pupil, it will obstruct the near field more than if it is to one side or above. In a few cases there will be an associated iritis, iridocyclitis, perforation, serpiginous ulcer, etc. These cases all belong to the specialist, so I shall not discuss them.

As to treatment, this is often a big problem, especially in the obstinate cases, and frequently both you and the patient will become discouraged. The chief measures of importance are to treat the more innocent cases energetically and thus prevent the more serious ones. What may appear innocent today may in a few days be serious and dangerous.

1. Insist on rest. The good eye must not be used. No reading, no picture shows, no housework or office work, but *rest.*

2. Atropine early (preferably in sterile solution). This means physiologic rest for the inflamed eye, and is of the utmost value.

3. Hot packs of epsom salts, table salt, boric acid or plain water, applied every hour for fifteen minutes.

4. For the pain, allonal or codeine will usually suffice, but sometimes morphine may be necessary. Do not use cocaine, even though it gives relief from pain. It is positively harmful in my experience, and I think authorities will support me in condemning its use.

5. If the patient is run down and anemic, iron and arsenic will help. Watch closely for any and all constitutional disturbances. See the patient often. Inquire into his daily habits. Valuable information may be overlooked, if you are not always on guard.

6. Myriad remedies for use in the eye are recommended by authorities, but in my hands the best results have come from one-half of 1 per cent fresh mercurochrome solution. Powdered calomel on the ulcer is of value, if there is considerable debris when first seen. Zinc sulphate solution, 2 grains to the ounce, may be used, especially if there is much associated conjunctivitis. If the ulcer is severe and spreading, cauterization under cocaine anesthesia with phenol, silver nitrate or the actual cautery is a measure of extreme value, but the greatest caution must be exercised. In cauterizing be sure your own vision is good and your hand steady. Do not get beyond the margins of the ulcer. Fluoroscine will help to outline the ulcer, if you are in doubt as to the margins. Mental encouragement for the patient does no harm.

* * *

FIBROMA OF THE RIGHT LACRIMAL GLAND

L. H. Klemptner, M.D.
SEATTLE, WASH.

Growths of the lacrimal gland are of very rare occurrence and therefore each case is well worth recording.

Mrs. J. S., 40 years of age, was always of good health. About two years ago she noticed a swelling of the right upper lid, which slowly increased in size. But in the last two months the swelling was growing fast and the vision was diminishing.

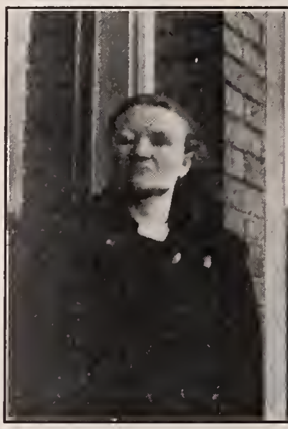
Fig. 1. Before operation.

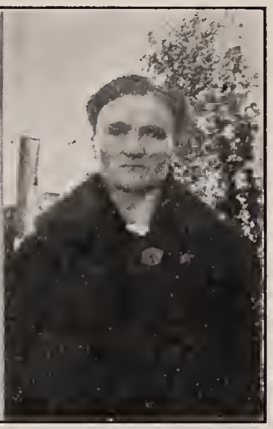
Fig. 2. After operation.

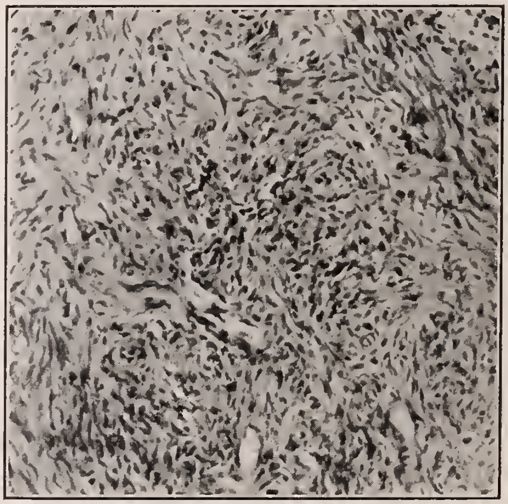
Fig. 3. Fibroma of lacrimal gland. Fairly vascular. No degenerations. Benign growth.

The right upper lid swollen, drooping, closes the eye. The patient is unable to raise the lid voluntarily. In the lacrimal fossa of the right frontal bone is palpable a firm slightly movable mass, penetrating the upper lid. The eyeball is pushed downwards and inwards but is not inflamed. Its tension is normal, pupillary reaction good, fundus normal. Vision of right eye with correction 16/20, of left 10/20. A palpable movable mass in the lacrimal fossa makes the diagnosis tumor of the lacrimal gland quite certain, but the nature of the growth can only be ascertained from sections under the microscope.

Removal is the only cure after syphilis and tuberculosis are excluded.

On May 2, 1924, I removed the growth, using general anesthesia. It was a hard, smooth tumor, with a well defined capsule, measuring 3 cm. in length, 2 cm. in depth and 1 cm. in width, about twice the size of a normal gland.

Dr. Mosiman gives the following description of a section of the tumor:

Section shows a piece of tissue made up of rather thick walled blood vessel spaces, some of which have areas of round cells and plasma cells at the periphery. Most of the cells are of a connective tissue type. Some areas are separated by edema. In other areas the cells are quite dense. A higher magnification shows the cells to be of two distinct types, connective tissue cells and cells with rather large irregular nuclei. There are plasma cells scattered throughout the section.

Diagnosis: Cellular fibroma.

Patient reported back in December, 1926. She is of good health, and her vision in the right eye has improved to 20/20. The three pictures show the patient before and after the operation and a microphotograph of a section of the growth.

PROLAPSE OF THE COLON THROUGH A COLOSTOMY OPENING

Earle M. Bevis, M.D.
TONASKET, WASH.

The treatment of obstructions of the lower bowel by colostomy, followed by excision in the operable cases, and radium or x-ray therapy in the inoperable cases, is giving these patients many months and even years of moderately active and useful life. The altered course of the intestinal current compatible with their existence gives the profession new problems and complications, the result of the altered mechanics and chemistry of the colon. These complications may be of so serious a nature that the patient's life will be forfeited, or at least a moderately useful life be converted into one of suffering. This is not a new situation in modern surgery, as evidenced by the history of jejunal ulcer following gastroenterostomy.

The case report which follows is in point, being a prolapse of the descending colon through a colostomy opening in a patient with inoperable carcinoma of the rectum, treated with radium and x-ray. A recent search of the literature reveals but four cases of prolapse of the colon through a colostomy opening, and all in the French journals. Three of these were prolapse of the lower descending colon or sigmoid through the lower opening of the colostomy, the intestine prolapsing upward. The fourth case, reported by Madranges, similar to my own, was a prolapse of the upper descending colon through the upper colostomy opening, the artificial anus.

In none of the reported cases is there a discussion of the etiology. The intermittent character of my own case permitted a careful observation of the development of the prolapsus and its limits. My opinion, the result of these observations and the subsequent course of the case, is that there are two and perhaps three factors responsible for the prolapse. First, the mesocolon must be unusually long, and the intestine freely mobile; second, there is an altered innervation of the intestine, the result, no doubt, of the section of the intestine at the colostomy, or of the primary obstructing pathology or both; and, finally, on every occasion that I examined the prolapsed mass, before and after it had reached its maximum size and after it had been reduced to the abdomen and formed again, there was always a hard cartilaginous-like ring about the size of a penny at the apex of the mass. After the mass had been amputated no mass or ring could be detected, which led to the assumption that the ring must have been a section of the intestine in tetanic contraction, invaginated into the intestine ahead of it, and forced into the prolapsed mass as its apex by active peristalsis. The etiology, then, may be summed up as, first, freely mobile intestine; and, second, altered innervation, plus tetanic contraction.

Mrs. A. W. J., 58 years old, has been in poor health since the fall of 1924, complaining of constipation, frequent and painful urination, and pain in the loins, with loss of weight and strength. In October and November of 1925 she visited several clinics and finally had a left inguinal colostomy in December, 1925, for inoperable carcinoma high in the rectum, with metastasis to the bladder and pelvic structures. Colostomy was followed by radium and x-ray therapy.

Convalescence was uninterrupted, with "the most satisfactory bowel movements in years," until about the first of March, 1926, when she complained of a protrusion or mass at the site of the opening of the descending colon. The mass measured from 4 to 6 cm. in diameter by from 10 to 15 cm. in length, depending on the length of time it had been showing, and the consequent interference with the circulation. The mass was slightly convex throughout its length on the superior surface and longer than the inferior surface, which was concave, due probably to the attachment of the mesocolon. The mass was carmin in color, when it had been down but a short time, and a dusky blue when it had showed for a longer period. The surface was smooth and glistening, the mucous membrane of the colon. The consistency was soft when the mass had showed but a short time, and spongy when it had been down for a longer period. At the apex of the mass, and surrounding the opening into the colon, was a hard cartilaginous-like ring, the size of a penny. The mass was rather easily returned to the abdomen by pressure into the center at the apex of the mass. The patient's daughter was instructed in this procedure. The mass was not tender, nor was there abdominal pain when it was showing, but a sense of mild abdominal distress. There was no vomiting. A liquid or nonirritating diet seemed to reduce the number of times the mass would show during the day, as did irrigation of the colon with salt solution. The mass appeared more likely to show when the patient was about on her feet, though it would appear when she was quietly reclining.

In April, 1926, the mass was amputated, the colon resected. The patient was kept in the hospital before operation for observation to determine the extreme limits of the prolapse. The technic followed was that advised by Mikulicz for complete prolapse of the rectum, with the refinements necessary for our own problem. Incision was made into the peritoneal cavity through the outer barrel of gut and suture of all its coats to the peritoneal coat of the inner barrel, proceeding segment by segment around the gut. Then followed excision of the prolapsed gut, suture of all coats of the outer to all coats of the inner barrel, using chromic catgut. The only difficulty experienced was on the segment of gut, to which was attached the mesocolon. The wound was dressed with boric powder, a rectal tube left in the bowel, and two sutures attached to the wound left long and tied about a dressing over the abdomen to lift the line of intestinal sutures nearer the surface of the abdomen. The line of intestinal sutures was about 4 cm. from the colostomy opening.

The section of colon removed measured 13 cm. in length. Macropathology was negative.

The patient made an uneventful recovery. Bowels were moved on the ninth day with a large dose of mineral oil, and she left the hospital on the thirteenth day.

About four weeks after her operation patient had a two hour attack of diarrhea and vomiting, which subsided without treatment. Since then she has had three similar attacks, each of decreasing severity and subsiding without treatment. Now, February, 1927, she has very satisfactory bowel movements, is in better health and spirits than since the beginning of her illness, does much of her own work, attends church, and in fact leads quite a normal existence.

In the four reported cases the colon was prolapsed and strangulated when they appeared for treatment, which was by amputation in each case. In my own case the prolapse was intermittent, which suggested the advisability of opening the abdomen through a skin incision and fixing the descending colon throughout its length to the parietal peritoneum, a procedure involving considerable manipulation of the intestines with its attendant shock. Extraabdominal resection of the colon, amputation of the mass, is done with very little shock, would definitely remove any local pathology that was an etiologic factor, and would shorten the colon.

The technic of the amputation in the reported cases is not always clear. There were no operative deaths. One patient is described as very ill with peritonitis following the amputation but recovered following a very free bowel movement. My own patient had no distress following operation, except that resulting from the ether. Some of these patients, no doubt, could be operated on to advantage with local anesthesia, or some modification of it, when it is recalled that at no time during the operation is there an incision of the skin or of the nerve-bearing parietal peritoneum, and that the peritoneal cavity is entered through an incision in the colon itself.

BIBLIOGRAPHY

Madranges: Arch. franco-belges de chir., Brux., 1923, XXVI, 1171.

Charbonnel: Jour. de med. de Bordeaux, 1923, LIII, 651.

Loubat et Fontan: Jour. de med. de Bordeaux, 1923, LIII, 577.

Bickman's Operative Surgery, Vol. V, page 206.

FRACTURE OF THE ARTICULAR PROCESS OF THE LOWER JAW

C. C. Wallin, M.D.
LEWISTOWN, MONT.

This case is presented on account of the extreme infrequency of fractures in this location.

The patient, a large, healthy girl fourteen years of age, was pitched headlong from a horse, the right lower jaw striking the ground between the mental foramen and the point of the chin. Five days later she was brought in for examination. There was pronounced swelling on the left side of the face, with tenderness most pronounced on the temporomaxillary articulation. The lower jaw was displaced to the left about one-fourth of an inch. Limited voluntary motion was possible.

The x-ray finding was as shown in fig. 1. Under ether the fragments were brought into approximation by internal and external manipulation between the thumb and forefinger, combined with depression of the maxilla. After the patient had recovered from the anesthetic my dental colleague, Dr. Hagstrom, determined the bite and wired the lower to the upper jaw. The results are shown in fig. 2.

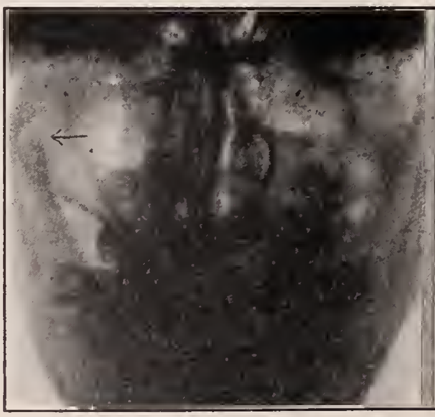

Fig. 1.

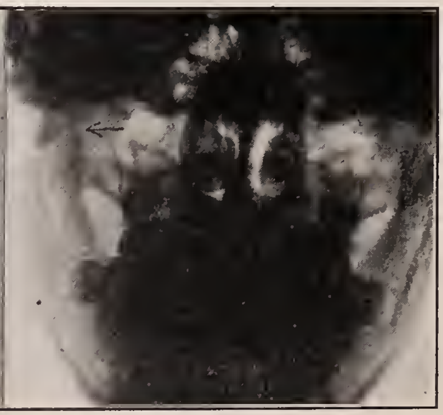

Fig. 2.

NORTHWEST MEDICINE
The Journal of the State Medical Associations of Oregon, Washington and Idaho
Devoted to the Interests of the Medical Profession of the Pacific Northwest

Editorial Office, 543 Stimson Building, Seattle, Wash.

APRIL, 1927

EDITORIAL

THE BOISE MEETING

The program of the meeting of the Pacific Northwest Medical Association, to be held in Boise June 27-29, is worthy of careful study. It is attractive by reason of the prominence and high standing of the speakers, but especially because of the wide range of interest of their subjects. Sufficient emphasis has been put upon the fundamental sciences so that recent advances, especially their clinical applications, will be presented in concise form. The program should assure this to be the best attended meeting the association has held.

The registration fee of fifteen dollars should be sent to Dr. Frederick Epplen, 422 Paulsen Building, Spokane, with the request for an identification certificate, which will permit one to take advantage of the special railroad fares which have been granted. Those who have paid their fees and have identification certificates can buy their round trip tickets at the beginning of the journey for one and one-half fares. Those traveling from the larger cities, fifteen or more in one group, may buy tickets for one and one-third for the round trip. They must travel on the same train going but may return as they desire within a certain time limit. Dependent members are permitted to travel on this plan also, so that wives and children may be included.

A special train from the coast can be arranged for with one fare for the round trip, if one hundred twenty-five members go from this section. This will provide a saving of $17.71. The schedule will be so arranged that there will be time saving of about six hours going and five returning. In order to receive this concession every one planning to make the trip should communicate at an early date with Dr. Epplen, Spokane; Dr. J. Earle Else, Medical Arts Bldg., Portland; or Dr. A. B. Hepler, Stimson Bldg., Seattle. Hotel accommodations may be obtained by writing to Dr. James L. Stewart, Boise, Idaho. Make your hotel reservations early and send in your registration fee promptly so that you may travel for reduced rates. We may be proud of these annual meetings which do so much to maintain high professional standards in the Northwest and should make every effort to attend and assure their continuance.

HOSPITAL CONFERENCE

The sectional meeting of the American College of Surgeons for Oregon, Washington and British Columbia will be held in Seattle April 11-12, the sessions being scheduled for the Olympic Hotel. Instead of a program of papers as is common in these meetings, the sessions will be devoted entirely to the consideration of hospital problems. Hospital standardization as inaugurated and promoted by this organization has been adopted by hospitals of standing in all of the states. Everyone is aware that its administration has been subjected to criticisms and suggestions from many parts of the country, in some cases even offering opposition to its rules and regulations.

The program for this meeting asks thirty questions, comprising topics for discussion, with provision made for any other questions that may be submitted from the floor. These embody the most common criticisms of hospital standardization and the subjects of controversy which ordinarily arise. It would seem during this time that all matters might be thrashed out, so that hospital standardization may be presented in its most effective aspects so that an understanding as to its administration might be reached to the satisfaction of everyone connected with hospital work. There is no question that this movement has promoted the efficiency of our hospitals and has placed them on an effective basis which was never previously attained. It is the desire of everyone interested in hospitals that they should function to a maximum of efficiency without obstruction and according to the best conceived principles in the interests of patients, attending physicians and surgeons, as well as hospital authorities.

USEFULNESS OF THE PHARMACOPOEIA

The average physician and medical student accept standard drugs and medical preparations which are used in daily practice with little thought as to their origin and authorization. It is fitting to call attention to the work of the Revision Committee of the U. S. Pharmacopoeia, the tenth revision of which was published last year, and is now the basis of our pharmacology. Both the medical and pharmaceutical professions are indebted to this Revision Committee which every decade provides an authoritative investigation of drugs and medicinal preparations for their use. The amount of work necessary for the accomplishment of these results cannot be appreciated unless attention has been called to the manifold details, and the extensive investigations which have been conducted over a period of years on the part of pharmacists, chemists and botanists. As a result of these investigations, a substantial number of new drugs have been added, others which have become antiquated have been deleted, and new information added concerning drugs already in use. The publication is not intended for daily reference, other volumes having been prepared for that purpose more accessible to the busy practitioner. It is well to keep in mind, however, the authoritative source whence are derived the drugs in common use. When more extensive information is desired along these lines, one should consult the ultimate authority as is presented in this volume.

VANCOUVER SUMMER SCHOOL

The medical profession of British Columbia will have an opportunity of attending lectures by distinguished members of the profession during the session of the seventh annual summer school at Vancouver, which is scheduled for June 21-24. Some of the outstanding lecturers from the medical schools of Canada, together with representatives from the United States, are on the program for this session. The names of the lecturers and other details of the course are noted on page five of our advertising section. Any physician from this side of the border who can find it convenient to attend these lectures, will do so with profit and satisfaction.

DR. ALPHA EUGENE ROCKEY

July 5, 1857–March 28, 1927

In the death of Dr. A. E. Rockey of Portland, the Pacific Northwest lost one of the greatest surgeons it has ever had and in all probability ever will have. Dr. Rockey began practice of medicine in 1878 in Iowa City and came to Portland in 1891, after a year and a half of study in Germany. He immediately took up general practice with special attention to surgery. "There were giants in those days" and great surgeons were outstanding men, far more so than at the present day, when there are so many capable operators. Lister's great work was still being debated and there were living surgeons who still doubted the germ theory of disease. Major surgery was in its swaddling clothes and he who had sufficient courage and will to invade the abdomen or the pleural cavity must needs be a man of character and power. Antisepsis was supreme, although some few were beginning to realize that it must soon be succeeded by asepsis. But a few years previously Horsley had contributed his epoch making papers on the subject of cerebral localization and in this country Keene and his followers were performing many operations on the cranium. Appendicitis was beginning to be popular, even fashionable, and the dispute as to when to operate or not to operate raged everywhere. In the surgeries long demonstrations were made before the students on the technic of hand washing, but rubber gloves and sterilized caps had not yet come into existence and, although surgeons exercised the utmost caution to insure clean hands, they and their assistants not infrequently bumped unprotected hands over a wound, with the almost certain contamination from dandruff and falling hairs, and other and greater faults were common.

Courtesy Oregon Journal

DR. A. E. ROCKEY

In most communities leading surgeons showed keen rivalry. Even in cities much larger than Portland then was, there could be but one great surgeon and any attempt to rival him was sure to precipitate controversy in the community. Dr. Rockey, young and virile, lived through this period and his experiences doubtless had much to do with bringing out the sterling qualities of resourcefulness which he exhibited throughout his life. Strongly individualistic, dominant in makeup, self-confident without being conceited, it was but a short time before he ranked with the leaders in the Pacific Northwest and indeed with those of the entire country. He acquired an enormous private practice, to which was further added much work that came to him as surgeon for various public utility companies. He was a hard worker, intensely interested in every new problem that came to him and was never satisfied until it was solved. No emergency in the operating room seemed sufficient to disturb his poise and assurance. He seemed equally at home in almost any field of operation. In his early life he removed cataracts. In his later life he became an adept brain surgeon. His abdominal work was distinguished for its great skill and excellent technic. The prostate gland held no secrets from him and the diseased thyroid was without terror for his skillful fingers. Fracture work and general surgery were for him all part of the day's work. Everything he did seemed to inspire him with fresh enthusiasm. As he operated he talked and demonstrated and nothing seemed to give him greater pleasure than an opportunity to show to other doctors and students how a difficult operation might best be performed.

Dr. Rockey was active in medical society work, was elected to various offices within the gift of his colleagues and invariably performed the duties with discretion, good judgment and an eye to the general welfare of the profession. Would that space permitted a fuller description of the activities of this great surgeon who has left us. He will be mourned by thousands of his former patients, missed from the civic activities of his community, and by his colleagues who knew him best he will long be remembered for his skill, judgment, resourcefulness, courage and truly remarkable personality.

MEDICAL NOTES

OREGON

Portland Invites National Convention. At the February meeting of the board of trustees of the American Medical Association, held in Chicago, Dr. Joseph A. Pettit officially presented Portland's invitation to the association to hold its 1928 convention in that city. The plan of meeting is to be decided at the 1927 convention in Washington, D. C., in May. Portland entertained the American Medical Association at its 1905 convention.

Marriage Medical Law to Stand. Separate bills brought before the present sessions of Senate and the House of Representatives of Oregon, which would have repealed the present law requiring medical examination of applicants for marriage licenses, were defeated by the legislators.

Operation of Hospital Threatened. The University of Oregon Medical School and friends of the Doernbecher Memorial Hospital for Children at Portland have been thoroughly alarmed by the prospect that Governor Patterson may veto the bill providing $178,000 annually from state funds for aid in maintaining the hospital. The work of the institution since its opening has been considerably curtailed by lack of money. Should aid from the state fail, it would probably be necessary to close the hospital, at least temporarily.

Construction of Tuberculosis Hospital Assured. Governor I. L. Patterson on March approved an appropriation of $225,000 which, together with an additional amount voted at the last general election, will make possible the early construction of the proposed Eastern Oregon Tuberculosis Hospital. The Dalles has appropriated funds for purchase of the site which is located on Sunset Hill.

Studies Health of Indians. Dr. H. R. Edwards of New York, medical field secretary of the National Tuberculosis Association and a member of the Indian Affairs Committee of the Institute of Government Research, Washington, D. C., discussed the results of his investigation on health of reservation Indians at the recent annual session of the Oregon Tuberculosis Association in Portland. He stated that criticism of Indian affairs had become so general that an investigation was virtually demanded.

Noted Australian Surgeon Visits Portland. Dr. Norman D. Royle of Sydney, Australia, who, together with the late Dr. Hunter, discovered a surgical method of treating spastic paraplegia, which has attracted world-wide interest, was the guest of honor at a meeting of Portland surgeons March 9. He discussed his work and showed moving pictures illustrating his methods.

Appointed to Board of Health. Dr. Harold C. Bean of Portland has been appointed a member of the Oregon State Board of Health to succeed the late Dr. C. M. Barbee.

Gifts to Hospital. The Oregon and the Portland State Dental Associations, together with the state board of dental examiners, have provided the Doernbecher Memorial Hospital with a complete dental equipment. The hospital has also received a bequest of $5,000 from the estate of the late Milton F. Henderson.

The Morningside Hospital of Portland, which was owned and directed by the late Dr. Henry Waldo Coe, has been bequeathed to his estate. It will continue to be operated under its present director, Dr. J. W. Luckey.

Dr. N. E. Davis of Chicago, a member of the faculty of Rush Medical College, addressed the board of the Wesley hospital, Marshfield, March 8.

Portland City and County Medical Society at its meeting Feb. 16 was furnished a program of papers by Drs. M. B. Marcellus and Geo. Garett of the United States Veterans' Bureau.

Central Willamette Medical Society met in Eugene March 3. Dr. Bertha Stuart addressed the members on a pediatric subject.

Jackson County Medical Society held a semimonthly meeting at the home of Dr. Charles T. Sweeney at Medford. Dr. E. W. Schockley read a paper on "Diathermy."

Dr. Egon Ullmann, a native of Vienna, Austria, and a graduate of the University of Vienna, has located for practice at Corvallis. He was formerly assistant to Prof. Neumann. He will confine his work to diseases of the eye, ear, nose and throat, and will also lecture on biology and physiology at the Oregon Agricultural College.

Dr. R. T. Boals, of Tillamook, has disposed of his practice to Dr. M. R. Charlton, formerly of the veterans' hospital at Portland.

Dr. John G. Manning, a native of McMinnville and a graduate of the Washington University School of Medicine, St. Louis, has opened an office in McMinnville.

Dr. Edward McLean, of Oregon City, recently underwent an operation for appendicitis at the Sellwood Hospital, Portland.

Hospital at Dayton. Mr. Albert Way has announced the opening of a small general hospital at Dayton.

Elected President. Dr. George P. Winchell of Eugene has been elected president of the Young Men's Christian Association of that city.

WASHINGTON

Announce Annual Lectures. The University of Washington has announced the faculty for the Eleventh Graduate Medical Lectures, to be held at the University July 18-22. Dr. George Crile, of Cleveland, will deliver the lectures on surgery; Dr. Charles L. Mix, of Chicago, the lectures on medicine; Dr. Charles L. Scudder, Boston, those on fractures and allied injuries to bones and joints.

American College of Surgeons. At the sectional meeting of the American College of Surgeons to be held at Seattle April 11-12, the visiting speakers will be Dr. Philip H. Kreuscher, professor of orthopedic surgery, Loyola University School of Medicine; Dr. L. G. Bowers, consulting surgeon, Miami Valley Hospital, Dayton, Ohio; Dr. C. G. Sutherland, roentgenologic section, Mayo Clinic, Rochester, and Dr. Franklin H. Martin, Chicago, director-general of the American College of Surgeons.

Investigate "Diet Cure." At the March meeting of the Whatcom County Medical Society, the activities of "Dr." Frank McCoy were discussed. This gentleman, who hails from Los Angeles, a city also distinguished as the home of Gaylord Wilshire and "I-on-a-co," recently delivered lectures in Bellingham on his method of curing disease by a diet, composed almost exclusively of orange juice. The lectures were preceded and accompanied by extensive newspaper advertising of the personal "health service" type. As a result of the "doctor's" activities physicians of Bellingham have found many patients to be suffering from ill effects of the inadequate diet prescribed.

Completes Hospital Survey. Dr. G. R. Broderick, of Oakland, Calif., medical director of the Almeda county hospital, and president of the American Hospital Association, made a complete survey in February of the hospital and community health needs of Seattle and King county. The survey was made possible through the united efforts of physicians, public health workers and other interested citizens. A report of the survey, including recommendations, will be made public at a later date.

Need Additional Hospital Facilities. The Sisters operating the St. Ignatius hospital at Colfax recently called attention of the local Chamber of Commerce to the fact that the hospital is inadequate in size for the needs of the community. The advisability of building an addition to the hospital is to be considered.

Physician Loses Lawsuit. A verdict of $6,015 for the plaintiffs was brought in by the jury of the Supreme Court of Walla Walla county in the case of Mr. and Mrs. C. R. Jones, of Waitsburg, against Dr. and Mrs. H. A. Mount of that city. The plaintiffs claimed damages for alleged neglect in treatment of their daughter's broken arm.

Reopen School Clinic. Physicians of Yakima are cooperating in furnishing medical service for the Yakima school clinic which was recently reopened.

The Seattle Pediatric Society held a meeting at the Children's Orthopedic Hospital March 18, at which cases were presented and discussed by the members.

Appointed County Physician. Dr. George Shorkley, of Mt. Vernon, has been appointed county physician of Skagit county.

Skagit County Medical Society has elected Drs. S. W. Holton and C. W. Crompton, of Sedro-Woolley, as president and secretary-treasurer respectively for 1927.

Snohomish County Medical Society, at its meeting in Everett March 1, was addressed by Dr. A. B. Murphy on the subject of "The Larynx in Relation to Thyroid Surgery."

Heads Hospital Staff. Dr. Frank R. Fursey has been elected president of the staff of the Deaconess hospital, Spokane.

Elected to School Board. Dr. T. D. Burger, of Spokane, was recently elected a member of the local school board.

Joins Clinic. Dr. F. I. Putnam, who has practiced the specialty of eye, ear, nose and throat diseases for the past eighteen years in Sioux Falls, S. D., has joined the clinic of Drs. Wm. A. Taylor and J. P. Richardson at Ellensburg.

Dr. W. E. Keihl, of Cle Elum, has been forced by illness to temporarily give up his practice. His place is being taken by Dr. H. H. Adams of Ronald.

Dr. D. C. Sawtelle, of Everett, suffered two broken ribs and his wife was severely injured March 12, when the automobile in which they were riding was side-swiped by another machine on the Bothell highway.

Dr. Eugenia M. Morelan, of Spokane, has returned from Portland, Ore., where she was confined by illness at the United States Veterans' Hospital.

IDAHO

Medical Examining Board. Dr. Fred E. Lucans, secretary of state, has recently announced the following members of the Board of Medical Examiners: Dr. C. F. Hanmer, Salmon; Dr. D. E. Cornwell, St. Maries; Dr. F. M. Cole, Caldwell; Dr. F. W. Almond, Boise; Dr. A. M. Newton, Pocatello, and Dr. C. M. Cline, Idaho Falls.

Joel L. Brown of Emmett has been appointed by Governor H. C. Baldridge as the labor representative on the Idaho Industrial Accident Board. The appointment is for a period of six years. Mr. Brown's opponent was James A. Lewis of Boise. Mr. Lewis had the unanimous endorsement of legally organized labor and the ex-service men of the state, including hundreds of employers.

Sanitarium Burned. The old Donaldson Sanitarium, at Boise, was destroyed by fire March 1. The building was unoccupied. Dr. Mary Donaldson, owner of the site and a retired physician, has on several occasions made attempts to interest Boise citizens in the construction of an old people's home on this property.

Dr. O. C. Carssow, of Lewiston, has announced plans for constructing a two-story modern building, which will include space for his offices.

The Physicians' Club of Boise has elected the following officers for 1927: President, Dr. L. W. Chilton; vice-president, Dr. E. E. Laubaugh; secretary-treasurer, Dr. Alfred Budge.

Physician Injured. Dr. J. D. Shinnick, of Cottonwood, was seriously injured February 28, when he was thrown from a buggy during a runaway accident.

Dr. Edward C. Mitchell has become associated with Dr. E. E. Getzloff in his medical and surgical practice at Priest River. He was formerly on the staff of the White Memorial and the Los Angeles County hospital, Los Angeles.

Appointed County Physician. Dr. D. D. Drennan, Coeur d'Alene, has been appointed county physician of Kootenai county.

Dr. F. W. Mitchell has been reappointed medical superintendent of the Blackfoot hospital for the insane.

OBITUARIES

Dr. Alpha Eugene Rockey died suddenly March 28, 1927, at his residence, Rockholm, Portland, Ore., the immediate cause of death being an apoplectic stroke. Three years before, while en route for Rio de Janeiro to attend a meeting of the American College of Surgeons, he sustained his first stroke which left him slightly paralyzed and forced him after several months to discontinue active practice. He graduated from Hannemann Medical College, Chicago, in 1878, practiced for about ten years in Iowa City and took his second degree of M.D. from Rush Medical College in 1890. Then he came to Portland, where he practiced continuously until incapacitated. He was married to Miss Phila Jane Watson in 1880 and is survived by Mrs. Rockey and his two sons, Paul and Eugene W. Rockey, both of whom have been associated with him in surgical practice for many years. He was on the staff of the Good Samaritan Hospital and Multnomah Hospital and had operated extensively all over Oregon. He was commissioned a Lieutenant in the Medical Reserve Corps in 1911 and, when America entered the World War, he was transferred for active service to the Base Hospital at Camp Lewis and rose to the rank of Lieutenant-Colonel. Meanwhile his two sons were in the medical service abroad. He was active in many medical organizations and was at one time president of the Portland City and County Medical Society, and of the North Pacific Surgical Association. He was a Fellow of the American College of Surgeons, an honorary member of the Pacific Coast Surgical Society, and of the Seattle Surgical Society, a member of the American Medical Association, the Oregon State Medical Association, the Portland Academy of Medicine and other societies, before which he presented numerous papers which were published in appropriate journals. For several years he taught clinical surgery in the University of Oregon. His social life was also active and he was a member of Arlington, Waverly, Multnomah Amateur Athletic and Golf Clubs and a a patron of various musical, art and dramatic organizations.

Dr. Samuel J. Torney, a pioneer eye, ear, nose and throat specialist of Bellingham, died at his home March 17, following a long illness, aged 60 years. He was born in Quebec in 1867, and graduated from the University of Illinois College of Medicine, Chicago, in 1900. He practiced for several years in Iowa, and after a year of postgraduate study located at Bellingham in 1905. He retired from active practice several years ago on account of ill health.

Dr. Marion Stiles, a pioneer physician of Walla Walla, died at Spokane, March 21. He graduated from the Bennett Medical College, Chicago, in 1881, and began practice at Walla Walla in the early '90s. He was at one time state and county health officer of Walla Walla county.

AMERICAN MEDICAL ASSOCIATION SPECIAL TRAIN

Anyone planning to attend the meeting of the American Medical Association at Washington, D. C., May 16-20, should consider the special train under the auspices of the Illinois State Medical Society. This train will go via the Pennsylvania railroad, leaving Chicago May 15-16 at 1 p.m., reaching Washington, D. C., the following morning at 9 a.m. Chicago being the transfer terminal for physicians coming from the Pacific Northwest, they can conveniently arrange to travel by this special train. It will provide a pleasing opportunity of making acquaintances among the professional men of Illinois and other states of that region. Inquiries concerning reservations and any other information should be directed to Mr. W. E. Blachley, Division Passenger Agent, Room 524, Union Station, Chicago.

REPORTS OF SOCIETY MEETINGS

OREGON

MARION-POLK-YAMHILL COUNTY MEDICAL SOCIETY

Pres., L. O. Clement; Secty., W. W. Baum

Marion-Polk-Yamhill County Medical Society held a meeting at Salem March 15. Dr. Harold C. Bean, of Portland, addressed the meeting on "Recent Developments in the Treatment of Pernicious Anemia." Dr. E. H. Hobson, Salem, discussed "Nitrous Oxide Anesthesia in Surgery."

MIDCOLUMBIA MEDICAL SOCIETY

Pres., C. G. French; Secty., T. E. Griffith

Mid-Columbia Medical Society at a recent meeting elected the following officers for 1927: President, Dr. Marcus Thrane, Hood River; vice-president, Dr. Foley, Condon; secretary, Dr. J. W. Sifton, Hood River.

PORTLAND CITY AND COUNTY MEDICAL SOCIETY

Pres., S. M. Strohecker; Sect'y., R. H. Wellington

The first regular meeting of Portland City and County Medical Society was held at Portland, Wednesday evening, March 2, at East Side Business Men's Club, being called to order by the president, Dr. S. M. Strohecker.

Minutes of the previous meeting were dispensed with, owing to the presence of the speaker of the evening, Dr. G. S. Peterkin, of Seattle, who spoke on "A Study of Standardization from the Patient's Point of View, Illustrating the Art of Selling to the Patient and Buyer Our Present Day Knowledge Regarding the Prostate." The paper was discussed by Drs. F. P. Johnson, A. E. Mackay and J. G. Cheetham.

The second regular monthly meeting of the society was called to order by the president, Dr. S. M. Strohecker Wednesday evening, March 16. Owing to the absence of the secretary, Dr. J. Earl Else was made temporary secretary.

Announcements were made of the coming meeting of The Pacific Northwest Medical Association and the dinner to be given by the medical men of this city to Dr. A. J. Giesy.

First paper, "The Treatment of Diabetes in Children," was read by Dr. Blair Holcomb. It was based on a study of 44 cases. A majority of these gave a history of some infection, while 25 per cent gave a history of diabetes in relatives and parents. The diet consisted of a high percentage of carboydrates together with the administration of insulin. These cases showed after treatment normal mental and physical progress. Of this series three are dead and forty-one living and well. The deaths occurred where maternal cooperation was poor. Dr. J. R. Montague called attention to the fact that formerly diabetic children lived an average of 2.4 years. Dr. Holcomb closed with the statement that we have no right to state that insulin will or will not always be needed, as the observation period for insulin has been short.

The second paper, "Christian Science Treatment, Its Dangers and Benefits," was by Mr. L. E. Scholl, of Seattle.

The president referred to some adverse comments upon the Sheppard-Towner Act and stated that a discussion would be held at some other time.

WASHINGTON

CLALLAM COUNTY MEDICAL SOCIETY

Pres., F. T. Hyde; Secty., W. H. Taylor

A meeting of Clallam County Medical Society was held at Port Angeles March 14. The following officers were elected for the year 1927: President, Dr. P. H. Brown, Pysht; vice-president, Dr. William M. Davidson, and secretary-treasurer, Dr. Will H. Taylor, Port Angeles. Dr. Walter Taylor, state senator from that district, spoke on the Basic Science Bill and other legislative measures.

KING COUNTY MEDICAL SOCIETY

Pres., A. T. Wanamaker; Sec't'y, W. W. Bell

A general meeting of King County Medical Society was held at Seattle on the evening of March 7, with President A. T. Wanamaker in the chair. Eighty-two members were present. Minutes of the previous meeting were read and approved.

Dr. Frederick Slyfield presented a postmortem specimen of lung, showing bronchiectasis with numerous abscesses.

Dr. A. E. Rich, of Tacoma, gave an address on "The Common Bony Pathology Producing Symptoms in the Lower Back," illustrated by radiographs. He displayed exostoses of the processes of the lumbar spine which were responsible for symptoms of back pains. Ankylosis of the hip, with shortening of the leg, may produce pain by strain on muscles of the back. Lumbar ribs pressing on soft structures or crest of the ilium may produce pain. There may be atrophic or hypertrophic arthritic conditions producing pain in the lumbar region. Sacroiliac arthritis produced 9 per cent and sacroiliac mobility or subluxation 12 per cent of cases reported, while sacralization of the fifth lumbar vertebra occur in 11 per cent. The paper was discussed by Drs. C. F. Eikenbary, H. J. Wyckoff and R. L. Jeffery.

Dr. G. W. Overmeyer, Chehalis, read a paper on "Observations in the Use of Antitoxin in Scarlet Fever." Of 272 cases recently observed, 106 showed a positive reaction to the Dick test. A large percentage receiving prophylactic injections had more or less reactions, as also occurred in twenty-three receiving immunizing doses. The paper was discussed by Drs. McCulloch, Jones and Carney.

Dr. J. B. Jacobs was elected to membership, while applications were read from Drs. Adolph Weinzirl and F. P. McNamee.

A meeting of the medical section of King County Medical Society was held March 14, with Dr. Homer Wheelon in the chair.

A case of atrophic cirrhosis of the liver and another of multiple abscess of the liver, secondary to gangrenous appendicitis, were presented by Drs. C. E. Watts and D. H. Nickson. They were discussed by Dr. Geo. C. Miller.

The paper of the evening was by Dr. George C. Miller on "Significance of Lymphocytosis." While the diagnosis of leukemia was relatively simple some years ago, today it is more complicated. The origin of lymphocytes was explained and their development from infancy to maturity. The clinical conditions in which lymphocytosis is found were described, cases being cited to illustrate each. In most conditions, except the leukemias, lymphocytosis is unusual. Blood findings must confirm the diseased state by history and physical findings. Infectious mononucleosis has been described in recent years as an entity. The symptoms and course of this disease were presented. A case was cited and discussed in detail. In contrast to this, acute lymphatic leukemia was considered. A case was described with a description of symptoms and course. The paper was discussed by Drs. O. J. West, D. H. Nickson and W. S. Griswold.

PIERCE COUNTY MEDICAL SOCIETY

Pres., E. F. Dodds; Sec't'y, W. B. Penney

The regular meeting of Pierce County Medical Society was held in its rooms, Tacoma, March 8. Dr. E. F. Dodds in the chair. Minutes of the last meeting read and approved.

An error of 20 cents reported by the Auditing Committee was reported as having been found, and the books are correct.

Dr. Rich spoke of the organization of United States General Hospital No. 141. He stated that only four more men were needed to complete the unit.

Drs. Frank H. Douglass and Horace G. Miller were unanimously elected to membership in the society.

A motion was made, seconded and carried that a Committee of Arrangements for the state medical meeting be appointed by the president of the local society to act with the state committee. The state meeting is to be held in Tacoma the last three days in August.

PROGRAM

"The Problem of Diabetic Children," Dr. Lester J. Palmer, of Seattle. He gave a discussion involving the questions of deficient pancreatic secretions in children, also the role of infections in this deficiency. Many diabetic children are overweight, but most of them are underweight. Adults are more apt to be overweight. At the present time there are few deaths from acidosis.

"End Results in Surgical Treatment of Peptic Ulcer," Dr. J. Tate Mason, Seattle. This paper was illustrated with lantern slides, and was discussed by Drs. J. B. McNerthney and H. J. Whitacre.

LOCUM TENENS AVAILABLE

A good proposition will be offered to a suitable man with Oregon license to fill a three months locum tenens. Position available at once. Address Dr. E. R. Huckleberry, Garibaldi, Ore.

PUBLIC HEALTH LEAGUES

WASHINGTON

BASIC SCIENCE BILL

The Basic Science Bill, a product of two years' effort on the part of the Public Health League, was officially signed by Governor Hartley on March 1. The measure had previously received a total vote of 102 to 29 in the legislature, representing a gain of twenty-five per cent over the vote one year ago.

This act requires every applicant for a license to practice any of the healing professions in Washington to pass a preliminary examination in the basic sciences before a faculty committee of five, selected from the University of Washington and the Washington State College. The subjects to be covered in this examination are anatomy, physiology, pathology, chemistry and hygiene. An average grade of seventy-five per cent is required.

While there has not as yet been a ruling on the part of the Attorney General, it is expected that the Department of Licenses will soon seek one covering the question of reciprocity with other states. It is clear that there will be no interference with reciprocal privileges now established as to the strictly professional tests, but it is apparent, from a close reading of the act, that all applicants for license henceforth in Washington must and are required to first pass this examination in the basic sciences. No provision is made in the act exempting any applicant from the test, whether seeking license here by examination or by reciprocity agreements.

The passage of this act is heralded by public health leaders as an outstanding achievement. It is claimed now that Washington, through the passage of this bill, has been lifted from the "dumping ground" belt in that its standards are essentially elevated. Loose reciprocal agreements by various healing groups, coupled with several dangerously constructed professional acts, have proven very unsatisfactory in the past. "Diploma mills" have even flourished in the state. Low standards of education, fly-by-night schools and trick examinations are eliminated with the operation of this measure, it is said.

LAW ENFORCEMENT PROJECT GOES OVER

The question of effective law enforcement machinery will be carried forward into the next session. Some division of opinion developed during the present session as to this legislation. It will be recalled that the former legislature passed a measure providing for professional license law enforcement in the office of the attorney general. This bill was vetoed by the governor. It was not pressed to a vote this session, and could not have been passed over the veto, owing to the administration opposition.

A substitute measure was introduced, calling for the formation of an enforcement machine in the Department of Licenses, to be run by an attorney. This measure would have made possible the use of the injunction against persons practicing any of the professions without a license, and its operating expenses of $20,000 a year would have been met from renewal fees paid in by physicians, dentists, pharmacists and others.

At present the physicians of Washington do not pay renewal fees, though such are collected from the other professional groups. The League officers have taken the position that any system by which such fees are to be assessed and collected for the general fund would be opposed, but if such fees could be given over to a strict law enforcement campaign they would favor.

The substitute bill passed the House, but was held in the Senate. It is hoped that a definite law enforcement policy may be outlined for the next legislature, one which may have the approval of the health forces of the state and be pressed through to successful conclusion.

INSURANCE ACTS THREATENED

Firing the first gun to begin an apparent series of legislative maneuvers to open up the insurance acts, including the state industrial act, to cultist practice of all kinds and description, an amendment was offered in the Senate to the firemen's insurance bill which would provide not only medical attention, but "any kind of treatment desired by the patient."

While the amendment, if carried, would only have applied to the firemen's fund, yet it would have set a precedent for amendments covering other insurance acts. Chiropractors and sanipractors and other groups have been trying for some years to get under the state industrial fund without avail.

The fight against this amendment was led by the veteran physician and legislator of the upper house, Dr. J. C. McCauley of Kittitas county, who stressed the danger of emasculating the various insurance acts in such a manner. "'Medical treatment' would be a joke under such a provision," he said. On roll call the amendment was defeated by a vote of 27 to 13.

TOURIST CAMPS AND OYSTERS

The departmental measure providing for better inspection of tourist camps did not make much headway in the legislature. "Too much regulation" appeared to be the general complaint against this and other measures calling for fees and for the appointment of additional state officers and employees.

The oysters may continue their meanderings without the fear of any additional administrative restrictions, since S. B. 185, offered by the Department of Health, died in the House after being safely piloted through the Senate. This measure provided for inspection of fish and shell fish grounds. The bill was held in the House at the request of the state department as a result of legal opinion that the department already had sufficient powers under present statutes to maintain adequate inspection of oyster beds.

IDAHO

OSTEOPATHS BATTLE AGAIN

The osteopaths of Idaho, after a campaign of two years, introduced a bill in the House of Representatives (H. B. 88), allowing them to do surgery as prescribed by the American Osteopathic Association. Great preparations had been made by the attorney for the osteopaths but their baby lived only twenty-four hours. It was introduced January 31 by Representatives McBirney of Ada and Chas. Hackney of Owyhee. It was referred by the speaker to the Reference Committee. It is the duty of this committee to advise for or against printing. The committee reported the bill back "without recommendation." Representative Don Whitehead of Ada County moved, seconded by Representative Chas. McDonald, "that the bill be laid on the table." The motion carried by a vote of 42 to 23. The following is the vote of members:

Ayes: Adam, Anderson (Bingham), Andrus, Baxter, Chalfant, Clark, Coulter, Davis, Fenn, Harsh, Hatch (Teton), Hatch (Franklin), Hoffman, Jenny, Jones, Jorgensen, Kasberg, Keating, Knipe, Magleby, Marineau, McCombs, McDonald, McGinley, Mehlhaff, Mendenhall, Oversmith, Paisley, Parish, Pearson, Pennington, Pettygrove, Sanborn, Spoor, Steinkopf, Talboy, Tapper, Thomason, White, Whitehead, Wilson, Mr. Speaker. Total, 42.

Nays: Anderson (Bonneville), Appel, Baumgartner, Brainard, Brandt, Cobbley, Darrow, Detweiler, Durfee, Egbert, Fails, Fuld, Hackney, Hanson, Manifold, McBirney, Metcalf, Oppenheim, Sanderson, Summers, Suplee, Taylor, Whitney. Total, 23.

A similar bill was introduced in the Senate on February 7 by Senator Poage of Canyon County (S. B. 73). The Senate Public Health Committee after consideration brought in a report recommending "that it be not printed and that it do not pass." Whereupon the introducer of the bill asked that he be allowed to withdraw the measure. His request was granted.

HOSPITAL BILLS INTRODUCED

Several bills endeavoring to regulate hospitals under the Industrial Accident Law have been introduced. They were withdrawn or defeated.

DEPARTMENT OF LAW ENFORCEMENT

Considerable agitation has been manifested over Governor Baldridge's recommendation that a Commissioner of Law Enforcement be appointed. During the last eight years the Secretary of State has been appointed ex-officio Commissioner. The Governor in his message to the legislature recommended that an appropriation be made for a Commissioner. Some legislators for unknown reasons objected and a compromise was worked out for an appropriation for a period of eighteen months, commencing July 1. This department has charge of all license operations, including the collection of the gasoline tax.

THE ASYLUM BOARD

Governor Baldridge has appointed for the next biennium a Board of Trustees for the Blackfoot Insane Asylum: Senator Chas. F. Baker of Mackay, Fred Gustafson of Idaho Falls, and Dr. A. F. O. Nielson of Oakley.

NEW INSURANCE MANAGER

Governor Baldridge has appointed Fred E. Fisk of Parma as Manager of the State Insurance Fund to succeed W. D. Yager. Mr. Fisk has been very prominent in the business and political life in the state for a number of years. He was a director in the Idaho State Life Insurance Company up to the time that it was absorbed by the Occidental of California.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

A MANUAL OF PHARMACOLOGY and its application to Therapeutics and Toxicology. By Thorald Sollmann, M.D., Professor of Pharmacology and Materia Medica in the School of Medicine of Western Reserve University, Cleveland. Third Edition; entirely reset. 1184 pages. Philadelphia and London. W. B. Saunders Company, 1926. Cloth, $7.50 net.

The object of the book is "to furnish an outline of the current conceptions of the actions of drugs, especially from the point of view of their practical importance in medicine." The important and essential portions of the text are in large print, the less important being in fine print, so that the busy practitioner may readily find what he most needs. If one has the leisure for further study, he will find much interesting material, many valuable references and discussions of the physiologic actions of drugs.

The author is conservative in his discussion of the therapy of gland products. The physiologic actions of these preparations, so far as they are known, are thoroughly discussed, and the conditions in which they are useful are pointed out, but in discussing the treatment of glandular deficiency he says, "Brilliant success has been attained with thyroid in cretinism, and with insulin in diabetes; parathyroid therapy is also promising. With other glands there have been so far no definite results. It would be rash to prophesy the future from these failures; but permanent advances can only be expected from scientific experimentation . . . Oral administration has been adequate only in case of the thyroid gland." He says that the development of gland therapy is hindered by premature enthusiasm, which is inclined to dispense with definite criteria of action with adequate controls. Judgment is sometimes based on desires instead of on facts.

All drugs of known efficiency are discussed with consummate precision. Drugs whose action is doubtful and those of minor importance receive less attention, but appear with almost encyclopedic completeness, so that one is seldom disappointed in getting reliable information on any drug. The book is based upon extensive and careful reading and research, and one can rely upon the drugs doing all that the author claims for them. GRISWOLD.

THE MODERN PRACTICE OF PEDIATRICS. By William Palmer Lucas, M. D., LL. D., Professor of Pediatrics in the University of California Medical School, San Francisco, etc. First Edition. Illustrated. 962 pp. The Macmillan Co., New York.

The author, who is one of the foremost American clinical and investigative pediatricians, has designed this work primarily for the student. The aim has been to relate the study of the diseases of childhood to the positive aspects of health. The advantages of prevention are at all times pointed out. In the preface Dr. Lucas acknowledges the debt of physicians to the Federal Children's Bureau, which has been so successful in popular education on matters of child hygiene. The book is dedicated to Mr. Herbert C. Hoover, who has taken an important part in the work of the Bureau from the time of its inception.

The volume covers fairly completely the diseases of infancy and childhood. More space is allotted to the subjects of physiology, hygiene and the social aspects of pediatrics than is found in most contemporary works. The chapters are short and concise. Only sufficient discussion of etiology and pathology of the various diseases is included to allow an understanding of symptomatology, diagnosis and treatment. Therapeutic measures are carefully explained in detail. The author has fortunately grasped the fact that the beginning student must be familiarized with the special problems and difficulties which arise in applying common methods of treatment of the young and uncooperative patient. A bibliography of American and foreign literature at the end of each chapter is a feature which should prove helpful. The concluding chapter is entitled, "Therepeutic and Diagnostic Procedures." Here the technical tasks incident to clinical pediatrics are explained in detail.

The author throughout the work displays a modern and scientific knowledge of pediatrics. Although he speaks more frequently of the "science" than of the "art" in relation to his specialty, it is evident from a study of his methods of approach to the problems of infancy and childhood, that he is adequately endowed with the "art" of pediatrics. The volume will be valuable as a reference handbook to any physician interested in the subject.

OLMSTED.

INFECTIONS OF THE HAND. By L. R. Fifield, F. R. C. S. Eng. Surgical Registrar and First Assistant and Demonstrator of Anatomy, London Hospital, etc. With 2 Colored Plates and Many other Illustrations. 192 pp. $3.00. Paul B. Hoeber, Inc., New York, 1927.

The subject of infections of the hand is immediately associated in the minds of many of us with the name of Kanavall, and any books which are written upon this subject are quite naturally compared with his classical work. To quote from the preface, Mr. Fifield states, "The present work, therefore, requires some justification. I think that this lies in the need for a much smaller and simpler book for students, house-surgeons and practitioners on infections of the hand. . . inadequately dealt with in text books of surgery."

We are unable to find anything in this volume which has not been stated elsewhere. At the same time we have never had the subject presented so clearly, concisely and adequately. After all, the secret of the treatment of infections of the hand lies in their prevention, if one may so state it, and it is interesting to notice that this writer, as well as Kanavall, states that there is no better chemical for use as a first treatment than our old friend tincture of iodine. This book will be an excellent addition to the library of surgeons, particularly those engaged in so-called "industrial" surgery.

FORBES.

High Frequency Practice. For Practitioners and Students. By Burton Baker Grover, M. D., Author of The Handbook of Electrotherapy, etc. Illustrated with Engravings, thoroughly Revised and Rewritten. Fourth Edition, 555 pp. $6.00. The Electron Press, Kansas City, 1926.

This is the clearest and most instructive book on the subject of diathermy which the reviewer has read. Early chapters discuss the principles of electricity, magnetism and high frequency currents, explaining them in a manner to be appreciated and grasped by anyone, although not familiar with the general field of electricity. The principles on which are based different forms of diathermic treatment are outlined so that anyone employing this procedure can obtain some knowledge of the basic facts.

Chapters discuss medical and surgical diathermy, explaining the general principles to which their practice conforms. Other chapters consider the special organs of the body and the different diseases to which each is subject. Details of treating each are outlined, with suggestions and cautions concerning the high frequency current in connection with the disease under consideration. The author fortifies his statements relative to many conditions by the results of experiments and research work which impart confidence to the reader. His conservatism and the moderation of his claims are commendable. The book is worthy of careful perusal. Smith.

Pernicious Anaemia. Leucaemia and Aplastic Anaemia. An Investigation from the Comparative Pathology and Embryological Point of View. By J. P. McGowan, M. A., M. D., B.Sc., Pathologist to the Rowett Research Institute, Aberdeen. 116 pp. $3.00. Paul B. Hoeber, Inc. New York, 1927.

This book is a very comprehensive consideration of the formation and action of white and red blood cells in the types of disease suggested. A very considerable amount of work has been done upon the fowl. Analogies are drawn from this work in regard to human diseases of a similar nature. It is demonstrated that the pernicious anemia, myelogenous-leucemia pathologic syndrome in human beings has been shown to be analogous in many respects to a condition found in fowls called leucosis. It would seem from an analysis of this text, together with the finding by Sabin and Doan which is quoted, that we are on the verge of new conceptions in regard to blood cytology. Hofrichter.

The Conquest of Disease. By Thurman B. Rice, A.M., M.D., Assistant Professor of Sanitary Science, Indiana University School of Medicine. 356 pp. The Macmillan Company, New York. 1927.

This volume is edited primarily for the information of the layman but provides interesting reading for the physician. Its purposes are to set forth the most recent scientific information concerning the transmissible diseases, to make this subject interesting to the general reader, and to emphasize the great advances already made through scientific methods by comparing the past with the present. The language is intended to be entirely nontechnical. The conquest of transmissible diseases is briefly reviewed, followed by a discussion of its causes. Infection and resistance are presented in an attractive manner. Under separate chapters each of the transmissible diseases is discussed, dealing with its history, method of protection and transmission. Each disease is presented in such an attractive and fascinating manner that the essentials can be clearly comprehended by the nonmedical reader. Part III deals with means by which transmissible diseases are controlled. Under isolation, quarantine, fumigation and disinfection, the necessity of properly financing and administering public health measures is emphasized. This is a book well worth reading.

General Surgery, The Practical Medicine Series. Edited by Evarts A. Graham, A. B., M. D., Professor of Surgery, Washington University School of Medicine, Etc. Series 1926. 726 pp. $3.00. The Year Book Publishers, Chicago.

The new editor of this volume is living up to the standard established by Murphy and Oschner, and presents us with an extract of the world's surgical literature for 1926 that cannot be gotten elsewhere. The selection of material seems excellent and the author's well-known interest in the diagnosis of gallbladder disease gives an authoritative value to the discussion of this region. The author confesses to a natural difficulty in keeping the volume small, but it covers a wide range of topics. Forbes.

A Primer for Diabetic Patients. A Brief Outline of the Treatment of Diabetes with Diet and Insulin, Including Directions and Charts for the Use of Physicians in Planning Diet Prescriptions. By Russel M. Wilder, M. D., Section on Nutrition, Division of Medicine, Mayo Clinic. Third Edition, Reset. 12mo. of 134 pages. Philadelphia and London: W. B. Saunders Company, 1927. Cloth, $1.50 net.

The third edition of this valuable little booklet speaks somewhat for its acceptance as a primer for diabetic patients. There is considerable enlargement over the previous edition, and the book is much more practical than its successor. Of particular advantage are the dietary combinations in the form of recipes for substitutions in well organized diets. The general practitioner will find this booklet of extreme value in his management of the diabetic patient.

Hofrichter.

A Manual of Materia Medica for Medical Students. By E. Quin Thornton, M.D., Assistant Professor of Materia Medica in the Jefferson Medical College, Philadelphia. Second Edition, Thoroughly Revised. 384 pp. $4.50. Lea & Febiger, Philadelphia and New York, 1927.

The tenth decennial revision of the United States Pharmacopoeia added forty pharmacopoeial articles, deleted one hundred and ninety-one and changed forty-seven official titles. These conditions have necessitated another edition of this very useful and instructive manual. It does not presume to cover the whole subject of materia medica but is intended to familiarize one with official drugs and to lay the foundation for more extensive study. Part I deals with dosage and prescription writing which are

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essential to every practitioner. The author believes it of prime importance to know Latin and English names and synonyms. Part II discusses inorganic articles, arranged in allied groups, while in Part III official organic drugs and chemicals are arranged alphabetically according to their common uses. This is a brief and convenient means of studying drugs according to their daily application. In this volume one can obtain much useful information in a condensed form pertaining to the subject of materia medica.

Textbook of Biological Chemistry. By James B. Sumner, Ph.D., Assistant Professor of Biological Chemistry, Cornell University, Ithaca, New York. 283 pp. The Macmillan Company, New York, 1927.

The author has written this book for the elementary student and not for reference. The book makes easy reading for one who has had the fundamentals of chemistry. There are chapters on fats, carbohydrates and proteins. Following that on carbohydrates, there is a brief chapter on acidosis. These four chapters are covered in 137 pages. Four pages are devoted to the vitamins. There are chapters on energy requirement, constituents of the urine and their metabolism, blood and respiration, physiological detoxications, and physical chemistry of protoplasm.

The author has succeeded in discussing many interesting and practical facts, but the book is too elementary to be considered more than a brief introduction to biological chemistry. It can be recommended as an excellent introduction for the general reader. Griswold.

Transfusion of Blood. By Henry M. Feinblatt, M. D. Assistant Clinical Professor of Medicine, the Long Island College Hospital, Brooklyn, N. Y., etc. Author of "Clinical Laboratory Medicine." Illustrated by twenty-four Engravings. 137 pp. The MacMillan Company, New York. 1926.

This volume is an excellent treatise on the subject of blood transfusion, answering many of the questions naturally arising with the growing use of this procedure. Historical resume, physiologic considerations, blood grouping, an interesting chapter on donors, indications, dangers, a special chapter on transfusion in children and one of more recent interest on exsanguination transfusion are particularly well handled. As a whole, it is a welcome contribution and a very ready reference.

Speidel.

A Manual in Preliminary Dietetics. By Maude A. Perry, B.Sc., Director of Dietetics, The Montreal General Hospital, Montreal, Canada. 146 pp. $1.25. The C. V. Mosby Co., St. Louis, 1926.

This manual has been prepared for the instruction of nurses in preliminary dietetics. It consists of fifteen lessons, combining theory, demonstration and practical laboratory work. Each lesson considers a particular item of diet. For example, that on milk discusses its composition, general properties and methods of preparation. This is followed by formulae for its preparation for use of the patient. In a similar manner eggs, carbohydrates, meats and other foods are similarly treated. In this small volume one will find the principles thus enunciated, leading to a knowledge of diet and its application.

Hospital Housekeeping and Sanitation. By Nora P. Hurst, R.N. 155 pp. $1.25. The C. V. Mosby Co., St. Louis, 1926.

The purpose of this volume is to present material for correct hospital housekeeping and correct sanitation. Such work in the hospital means team work on the part of nurses, maids and orderlies. Girls in training should be taught the necessity of knowing the cost of supplies used in hospital work. Chapters deal with the technic of cleaning and polishing the institution, its equipment and arrangement, as well as the more technical subjects of heating, ventilating, light, plumbing, and the disposal of garbage. The essentials of all these and other topics are discussed, giving a clear outline of the requirements for each.

New Principle in Surgery of Large Vessels. The new principle in the surgery of the large vessels proposed by Emile Holman and Muriel E. Edwards, San Francisco (Journal A. M. A., March 19, 1927), consists of ligation of the vein proximal to the site of ligation of the artery. The blood pressure in an extremity may be increased below a divided artery by occlusion of the main vein, the extent of the increase being dependent on the site of ligation of the vein. Experimentally, ligation of the femoral vein increased the blood pressure in the distal end of the divided femoral artery 6 mm. of mercury; ligation of the common iliac vein raised it 20 mm., and ligation of the vena cava raised it 34 mm. The volume flow of blood to an extremity beyond a divided artery is increased by occlusion of the main vein. The extent of this increased flow also depends on the site of ligation of the vein. Experimentally, the minute volume flow from the distal end of a divided femoral artery was 0.9 cc. of blood; occlusion of the femoral vein increased this minute volume flow to 2 cc.; occlusion of the common iliac vein increased it to 10.6 cc., and occlusion of the vena cava to 11 cc. Gangrene of the extremity occurred in only 7.1 per cent of the animals in which the vena cava was ligated simultaneously with ligation of the common iliac artery, as compared to gangrene in 33.3 per cent of the animals in which the common iliac artery and vein were ligated at the same level. These experiments suggest certain clinical applications. 1. They corroborate the teachings of Makins and others that, in order to decrease the incidence of gangrene, ligation of the main artery to an extremity should be accompanied by ligation of the main vein. 2. It would appear, however, that ligation of the main vein should be done, not at the level of the ligation of the artery, but proximal to the venous tributaries that accompany the arterial branches furnishing the main collateral circulation. Ligation of the vein at this point produces an increased peripheral resistance in the capillary bed normally supplied by these arterial branches, and directs the blood flowing through these branches into channels anastomosing with the more distant arterial vessels. 3. If simultaneous ligation of the vein and artery is performed and signs of impending gangrene in the extremity appear, ligation of the vein at a considerable distance proximal to the level of the ligation of the artery is indicated. For example, if the popliteal artery and vein have been ligated and gangrene impends, ligation of the common femoral or common iliac vein is in order. 4. Ligation of the main vein to an extremity for improvement of the circulation in thromboangiitis obliterans and endarteritis obliterans as advocated by Oppel is justifiable on experimental grounds.

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ORIGINAL CONTRIBUTIONS

PROLAPSE OF THE FEMALE GENITALIA

A DESCRIPTIVE REVIEW

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ANATOMY AND NORMAL FUNCTION

There has always been a difference of opinion in regard to the relative functional importance of the ligamentous or fibrous as opposed to the voluntary muscular structures in the pelvic floor. With this in mind, it will be convenient to discuss separately the two types of supporting structure. It must be borne in mind, however, that their action and efficiency are constantly interdependent, and that the fibrous or ligamentous tissue of this region is rich in its content of elastic fibre and smooth muscle, and therefore somewhat tonic or contractile in nature.

The fibrous supports form, in effect, a hammock or diaphragm which firmly grasps the urethra and upper third of the vagina, underlies the bladder, and closely surrounds the supravaginal portion of the cervix. It sweeps down and in to the midline from the posterior surfaces of the pubic bones in front, the white line (arcus tendineus fasciæ pelvis) laterally, and from the ischii, sacral alæ and coccyx posteriorly. The anterior and lateral fibres converge to grip each other firmly in front of the neck of the bladder, interweave with the fibrous external coat of this viscus, and firmly grip the upper part of vagina and the cervix. The fibres binding the neck of the bladder to the pubic bones are known as the pubovesical ligament. The fascia between the posterior wall of the bladder and the anterior vaginal wall is known as the vesicovaginal fascia or plate. Urethrovaginal and cervicovesical fasciæ are also designated, but are not demarkated from the vesicovaginal plate.

It should be clearly understood that here, as elsewhere in this fibrous hammock, definite ligaments or tendons are not to be found. As one author says, "The viscera are simply invested in the remains of the tissue in which they were originally developed. This tissue is condensed in places to form definite ensheathing layers, particularly in the neighborhood of the vagina and lower part of the uterus. Any attempt to give definiteness to such layers is artificial, for the reason that these layers, though well marked in certain regions, pass gradually into the general mass of subperitoneal tissue which fills the pelvic cavity, and are no longer traceable."

An important integral part of the fibrous diaphragm is formed by the dense fibrous mass which sweeps forward and toward the midline, along the internal iliac vessels, goes over to the uterus in the base of the broad ligaments, and carries the uterine artery as it crosses the ureter. This is the ligament of Colles, or true lateral ligament of the uterus, also called the cardinal ligament. It is the most clearly defined and important fibrous support of the pelvic viscera. It is easily appreciated as the thick fibrous mass surrounding the uterine vessels, and swinging in from the sides of the pelvis, cut in cross section during total hysterectomy. I have noted that, until these structures are cut, the uterus cannot be depressed appreciably toward the pelvic outlet. These include the true uterosacral ligaments, which are not to be confused with the folds of peritoneum, called by this name, and used in the surgical correction of retroversion.

Stout bands of this fascia meet posterior to the cervix and vagina, in the central tendinous point of the perineum, and adjoin that part of the diaphragm which swings in from the sacral alæ, and indirectly from the sacral and coccigeal vertebræ, to grasp and invest the wall of the rectum. On the anterior wall of the rectum, especially, these fibres spread out to form the broad rectovaginal plate or septum.

In the region of the vagina, additional fibrous support is given to the floor by the three fascial layers of the urogenital diaphragm. This triangular structure surrounds and reinforces the opening through which the vagina passes.

The muscular elements are more definite and can be described more briefly. The origin of the levatores ani corresponds roughly with that of the fibrous sheaths described above. The anterior fibres sweep back from the pubic rami, the lateral fibres toward the midline (and posteriorly) from the white line of the pelvis, and the posterior fibres from the spines of the ischii and sacral alæ mezially to the coccyx and ano coccigeal raphe. These fibres are arbitrarily divided into three groups. The first and most important are those springing from the backs of the pubic rami. They comprise two stout parallel bands of muscle, sweeping from pubis to coccyx and bound together in their entire course by a stout tendinous raphe except where passage is allowed to the urethra, vagina (and cervix) and rectum. The second or illeococcygeus group converge from the sides of the pelvis. They are shorter, more oblique in their course, and blend in with the fibres of the pubococcygei and share their insertion. Their origin is continuous with that of the pubococcygei in front, and that of the coccygei posteriorly. The coccygei are simply the posterior group which complete the muscular diaphragm, and insert in the sides of the coccyx and anococcygeal raphe.

The urethra, vagina and rectum pass between the bodies of the pubococcygei muscles, which are firmly bound together in the rest of their course from pubis to coccyx by a stout fibrous raphe. They resist the dilatation of these orifices, and form a very important tonic and voluntary muscular support of the pelvic viscera. They also act as a contractile sling from the pubis around the rectum, and oppose the action of the fibres in the anococcygeal raphe, which, at a lower level, pull back on the rectum during the act of voluntary closure. This causes a kinking which reinforces sphincteric closure. Thus it is seen that injury to the levators per se, even without actual injury to the sphincter, causes impairment of the normal function of the rectum.

There are several small relatively unimportant muscles between the fascial layers of the urogenital trigone. The function of the corpora cavernosa (constrictores vaginæ) is perhaps of some importance. They encircle the vagina, inserting behind it, assist in voluntary constriction, and help to maintain a snug introitus.

At the junction of the two minute transversus perineii muscles in the posterior border of the trigone is the centrum tendineum (central tendinous point). Into this structure insert the tendons of the transverse perineii and constrictores vaginæ muscles, the medial portion of the fascia of the posterior border of the urogenital trigone, the condensations of fibres of the strong true lateral ligaments (see above), the raphe binding together the bodies of the pubococcygeal muscles in this region, and the fibrous extensions from the rectovaginal plate and posterior fibrous supports. While this structure itself is fibrous in nature, it is obvious that the efficient action of at least three groups of voluntary muscles is dependent upon its integrity. Hence, its rupture is very important in the mechanism of prolapse, and its repair essential to the restoration of function of these muscles.

Some of the points advanced in the controversy between the advocates of predominant ligamentous as opposed to voluntary muscular support are of interest. The following dissection illustrates the importance of the fibrous structures. The under surface of the pelvic floor is exposed from below. The abdomen is opened and the broad and round ligaments can be demonstrated lying loose and apparently not acting in any way as a support to the uterus. Next, the rectum and its canal are removed entire, the round ligaments, mesoovarium and mesosalpinx severed, and the broad ligaments cut down to the fibrous structures at the sides of the cervix. The uterus remains in anteversion and at its usual level in the pelvis.

The raphe between the bodies of the levatores is now cut (from below) and a free incision made transversely into the body of each muscle. The perineum is split back to the tip of the coccyx. Theoretically, this should destroy the support offered by the levators, but investigation proves that the uterus, vagina and bladder are still well supported and in position. *In order to free the uterus, it is necessary to cut through the dense fibrous tissue extending from the lateral wall to grasp the cervix* (true lateral ligaments). Similarly, to loose the bladder it is necessary to cut through the paravesical tissue which binds it to the pubic rami and blends with the cervical and vaginal supports behind. The upper third of the vagina, also, can not be freed without cutting these fibrous supports.

We feel that the value of observations made under such conditions is limited. We have tested the ability of the fibrous supports which grasp the vagina and cervix to hold the uterus temporarily, and especially in the cadaver, where none of the factors ordinarily favoring prolapse are active. But if the conditions could be met for such an experiment, it is probable that the voluntary muscles of the pelvic floor, functioning normally, could also temporarily support the uterus.

The opposing school, in describing the supports of the pelvic viscera, lays stress on the voluntary muscular structure and scarcely mentions the underlying fibrous support. The levators are compared to the recti of the abdomen and descent of the viscera to ventral hernia. Prolapse is the result of tear, injury or diastasis of the levators. One observer (Sturmdorf) considers only the integrity of the muscular bodies as important. On this basis he explained the fact that prolapse seldom occurs following unrepaired complete tears of the perineum ("third degree"). He points out that the tear in these cases is always in the midline, and involves the raphe rather than the muscle bodies.*

MECHANISM OF NORMAL SUPPORT

The accompanying illustration (fig. 1) will refresh in the reader's mind the angle at which the normal uterus leans toward the bladder and symphysis. It receives the thrust of intraabdominal pressure on its dorsum, transmitting it obliquely to the underlying structures, and to the fibrous supports which grip it at about the level of the internal os. The importance of this distribution of pressure will be discussed later. The real supporting value of the round ligaments, mesoovarium and mesosalpinx is evident in their action as guy ropes, helping to maintain the normal anteversion. We venture to suggest that these structures might aptly be called "secondary supports" as opposed to the structures which support the uterus directly (i.e., true lateral ligaments, pubococcygei muscles, etc.).

The advantage of the position of anteversion may be first roughly indicated by the comparison of this organ, "floating" above other viscera (bladder, sigmoid, etc.), to a floating log. A log or other object, lying flat on the surface of the water, will support considerable weight without sinking, but if up-ended will penetrate deeply, even under its own weight.

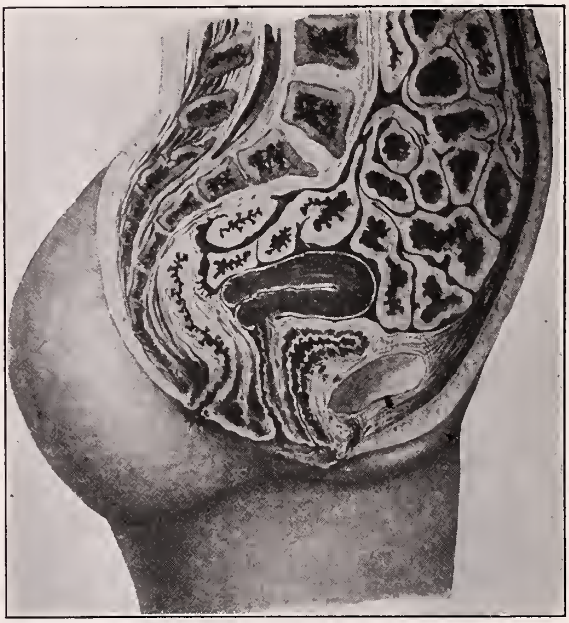

Fig. 1. (Crossen) The normal relations of the pelvic viscera are shown. The uterus in this position is buoyed up by the bladder and symphysis. The strong fibrous lateral supports are not shown. To prolapse, the uterus must be tipped backward, wrenched from its fibrous supports, and wedged downward around a corner and into the vaginal axis. The intact perineum and facsia of the rectovaginal septum oppose retroversion, and constitute a firm barrier to descent of the cervix.

To be more specific, the action of intraabdominal pressure, striking on the dorsum of the anteverted uterus, is vitiated in two ways. First, it is diverted to the symphysis, through the fundus and cushion of the bladder; second, it is diverted obliquely and posteriorly, and almost transversely to the axis of the outlet, thus exercising the pelvic supporting structures in the direction of their greatest strength (fig. 2).

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* Such a view seems to us extreme, and to continue the discussion is to soon reach a reductio ad absurdum. We must eliminate the controversial point of view, admit the established value of both types of structure, and turn our energies into more constructive channels. Others attempt to explain this finding as follows: In complete tear there is loss of sphincter control, with incontinence. No effort is required to expell the stool, with consequent decrease in the total intraabdominal pressure.

To prolapse from this position the uterus must be wrenched from its fibrous supports, pushed down around a corner, wedged between the bodies of the pubococcygei, and finally rammed against the buttress of an intact perineum. The position of anteversion, as stated, causes a posterior deflection of that part of the intraabdominal pressure which constitutes a constant force favoring prolapse. This force, transmitted to the primary supports through the cervix, acts in an obliquely posterior direction, and is opposed by the levator fibres in the direction of their optimum contractile strength. Thus the cervix can not be carried posteriorly (oblique thrust of intraabdominal pressure) nor can it be carried forward under the symphysis, thus bringing forward the line of force, and increasing the tendency to teeter into retroversion.

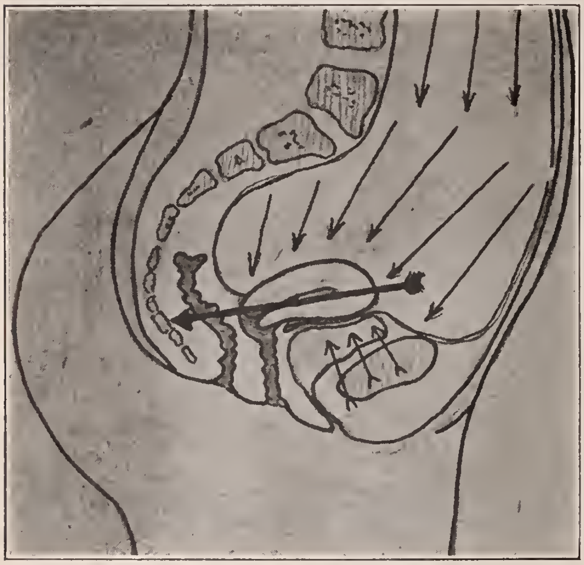

Fig. 2. Normal position. Small arrows show approximate direction of forces of intraabdominal pressure and counterpressure exerted by bladder and symphysis. Large arrow gives direction of the total of these forces, or the direction in which the uterus is impelled by the normal forces. This total force acts almost in the long axis of the levator fibres, allowing them to oppose prolapse with their maximum efficiency. The uterus is forced at right angles to the vaginal axis, and against the rectum and coccyx rather than against the perineum.

All are agreed as to the importance of the perineal body in the prevention of prolapse. Some ascribe this importance to the junction of parts of the true lateral ligaments in this region, while others hold that rupture or diastasis of the levators, with perhaps rupture of the constrictores vaginæ muscles, are the chief factors. The fact is that the perineum forms a fibromuscular wall which resists the thrust of the prolapsed cervix (the uterus having been pushed down around the corner) precisely as it resists the thrust of the descending head in labor. supports, lax atonic structure, faulty development, senility, impaired circulation, etc.

It is important to indicate the advantage gained The integrity of the fibrous structures inserting in the centrum tendineum is of undoubted importance, as is also the integrity of the levator and constrictor muscles which join and insert here. Rupture of the perineum weakens the primary fibrous supports, and incapacitates the voluntary muscles for efficient action. Here, as always, muscular and fibrous tissue act interdependently.

MECHANISM OF PROLAPSE

Several normally existent factors favor the production of prolapse of the uterus and bladder. They are (1) intraabdominal pressure; (2) gravity, or the weight of these viscera and their contents; (3) the potential dilatability of the vaginal opening and its surrounding structures in the pelvic floor.

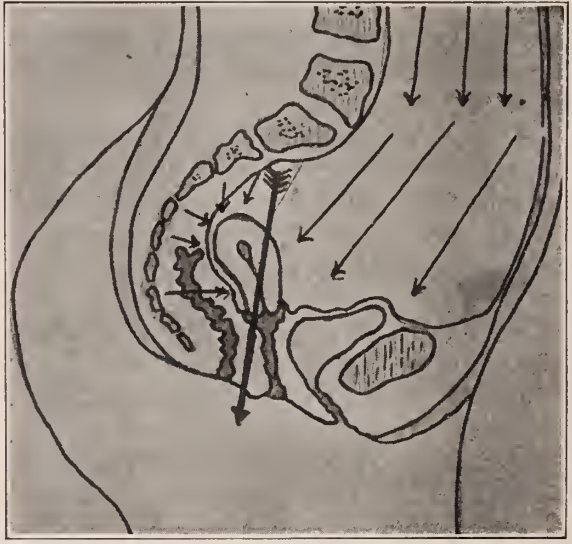

Fig. 3. The uterus is retroverted. The total force acts almost in the vaginal axis, and almost at right angles to the direction of the maximum contractile strength of the levators. There is no support from the bladder and symphysis except the fibrous band. Counter pressure from sacrum and coccyx does not oppose prolapse. The cervix will be pushed directly against the perineum. This is incicpient prolapse.

Abnormal forces all act through the agency of one of the above named factors. For example: (1) Intraabdominal pressure is increased by cough, straining at stool, ascites, action of abdominal muscles during parturition, rapidly growing abdominal tumors, etc. (2) The weight of the pelvic viscera is increased by such things as gravid uterus, subinvolution, congestion, fibroids, distended bladder, ovarian tumors, and by direct transmission of the weight of other abdominal tumors, etc. (3) Loss of tone of structures affecting constriction of the vaginal outlet is favored by relaxation following parturition, tearing and straining of normal by the forces favoring prolapse, where there is a retroversion of the uterus (fig. 3). The cervix swings forward and the fundus back, and the top and anterior surface of the uterus receive the force of intraabdominal pressure, diverting it directly into the axis of the vaginal canal. The uterus, up-ending, is pushed down, and penetrates under its own weight, being rammed like a wedge into the slit in the pelvic floor. Congestion adds weight to the fundus, especially in a postpartum retroversion with subinvolution. The line of force shifts to act at right angles to the direction of greatest contractile power of the levators. Generalized congestion decreases the tonus of the supporting structures, etc. In other words, in the great majority of cases, retroversion is synonymous with incipient prolapse.

The injuries caused by childbirth will be considered separately. It is easy to see why they figure so prominently in the production of prolapse, when we consider that this process acts to increase all the downward tendencies, leaving a patent canal and the uterus in vertical position to follow the products of conception, and frequently actually dragging the uterus far down into the outlet.

In the course of its descent, the uterus inverts and carries with it the anterior and posterior walls of the vagina. Since these structures adjoin the bladder and rectal wall respectively, we will discuss here the associated pathology of these organs.

Prolapse of the bladder, or cystocele, is a result of the same factors which mobilize the cervix prior to uterine prolapse. So far it has been considered as a part of the general process. It is always due to relaxation or rupture of the fascia between the posterior wall of the bladder and the anterior wall of the vagina, which allows the bladder wall to bulge into the vagina, pushing ahead of it the thin atonic mucous membrane. Injury to this vesicovaginal fascia is a common occurrence during childbirth, and is due to the descent of the head on the undilated cervix, especially where the anterior lip is carried down ahead of its attachments. This is clearly understood, when we realize that the fibrous tissue grasping the cervix from in front is incorporated in the so-called vesicovaginal plate, and is put under tension by any force which tends to draw down the cervix.

One well qualified observer (Watkins) describes a transverse tear of the vesicovaginal or cervicovesical fascia, through which the bladder wall pouches or herniates beneath the vaginal mucosa. It is certainly true that such a tear can occasionally be clearly demonstrated. It is frequently missed during the operation for cystocele, because the majority of operators dissect off fascia and mucous membrane from the bladder in a single flap, and do not expose the fascial layer in situ.

Others ascribe the occurrence of cystocele to rupture of the fibrous pillars at the neck of the bladder, which grasp it and anchor it to the posterior surface of the symphysis. This type of injury also undoubtedly occurs, and is the forerunner of the more massive cystoceles. It is seen more frequently in the roomy type of pelvis, with broad pubic arch, in which the head can deliver snugly under the arch, with more distention and injury of structures adjacent to the anterior lip.

Urethrocele frequently follows this type of injury. It may be caused by direct injury to the urethra and its supporting fibrous sheaths during labor, but is more often the result of pressure by the head on a distended bladder. It is important to remember that both cystocele and urethrocele seldom appear for months to years following the initial injury. This fact indicates that gradual relaxation of the remaining supporting tissue is also an important factor. Injury to the sphincter causes retention. The cystocele, once started, also causes retention. Distention follows, and with enlargement of the cystocele by straining and distention there follows a gradual dilatation of the urethra from the neck of the bladder down. It appears as a funnel shaped dilatation, adjacent to the cystocele, and decreasing in size toward the meatus.

The condition commonly called rectocele consists in a pouching of the lower part of the anterior wall of the rectum beneath the mucosa of the posterior vaginal wall. This is possible through diastasis or tear of the levators, with relaxation of the superimposed fascia. The mechanism of its enlargement, like that of the cystocele, is dependent upon straining and distention. It may enlarge to amazing proportions. In its production by straining the lower part always appears first, the rest rolling out smoothly.

High rectocele is a condition which is too frequently overlooked. It may occur alone or associated with the above described type. It is due to rupture or relaxation of the fascia of the rectovaginal plate, and can only be cured by restoring the integrity of this structure. It is not controlled or notably affected by the ordinary perineorrhaphy.

The accompanying illustration (fig. 4), adapted by Dickenson from Halban and Tandler, will be of assistance in differentiating the two more common types of prolapse of the pelvic viscera. The first and by far the most common type is early associated with a retroverted uterus, most frequently postpartum, subinvoluted, and supported only by a weakened and damaged pelvic floor. The patient is generally the victim of chronic constipation, and distention of the bladder with difficult urination is apt to be present to increase intraabdominal pressure. These factors not only favor the production of further prolapse of the uterus, but effect an increase of pressure at the base of the bladder, and the relaved inelastic fascia offers little resistance to the beginning cystocele.

It most commonly makes its appearance as a soft fluid tumor, bulging beneath the vaginal wall at the base of the urethra. With descent of the uterus the stretching of the retrovesical fascia progresses, allowing further bulging of the bag of bladder into the unsupported vaginal mucosa. More of the anterior wall from before backward appears at the vulva. The process continues and the cervix appears at the vulva, the anterior vaginal wall being drawn down and everted until the anterior fornix appears beneath the arch. Further prolapse may occur, with practically the whole uterus and bladder extruded in the sac of the inverted vagina, or the bladder may remain fairly well supported, and the uterus fill the inverted vagina. On the other hand, the cystocele may assume immense proportions. If this type of prolapse is reduced, it will recurr on standing or straining by the same mechanism, i.e., the anterior wall will roll out from before backward, delivering the cystocele entire before the cervix. Rectocele is a frequent but not a constant accompaniment.

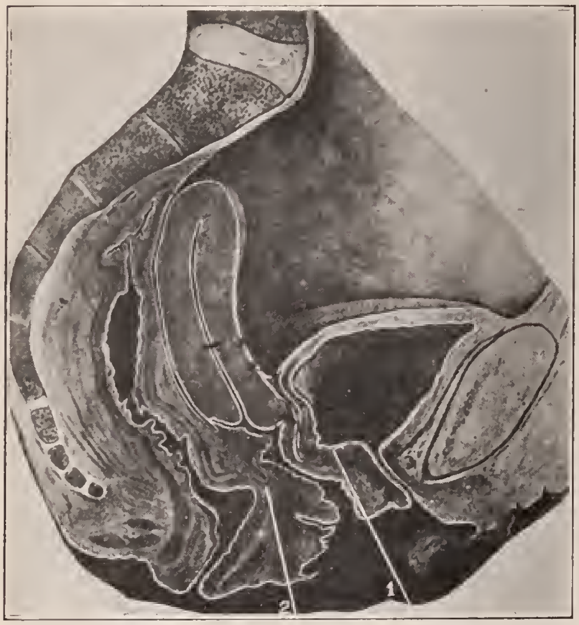

Fig. 4. (Halban and Tandler.) Incipient prolapse with early cystocele. The weakness in the vesicovaginal septum is shown at 1, allowing bulging of the bladder into the vagina. The uterus is retroverted but not yet prolapsed, its descent being opposed by an intact perineum. It is in position to receive the direct thrust of intraabdominal pressure. There is a tendency to high rectocele, shown by the relaxation at 2.

A less common type of prolapse occurs in nulliparous women. These are generally of the sthenic, ptotic type, having lax atonic ligamentous structure throughout. There is no cystocele in these cases. The outstanding feature is the great hypertrophy and elongation of the cervix, which may stretch and appear at the vulva without actual descent of the corpus uteri beyond normal. Retroversion is a less constant accompaniment, and anteversion is not uncommon. In the majority of these cases, however, there is a moderate degree of descent of the corpus. In such a case, cystocele and rectocele being absent, the vagina will invert from above downward, the cervix appearing before the vaginal walls. I have seen a cystocele in a nulliparous middle aged woman giving definite symptoms which were relieved by operation. This condition can be considered very rare.

TREATMENT

Soft packs and pessaries of various sorts have been used in the treatment of these conditions since earliest times. More radical measures consisted in the use of red hot irons on the redundant vaginal wall covering the cystocele, favorable effects being due to the contraction of the scar. There is something to be said for such methods in comparison with some which have been more recently devised. Their use was initiated on rational grounds and their results, while superficial and temporary, were in the main helpful.

Uncomplicated retroversion (which is generally incipient prolapse) and mild degrees of prolapse may yield to palliative measures. For the most part such treatment will consist in the treatment of the retroversion. Anterior replacement of the fundus by manipulation, exercise or both, pessaries, packs, etc. have all occasionally been successful. The use of such procedures should always be determined on clearly rational indications, and never routinely applied. They may result in actual harm, if not only in time lost to the patient. Where operation is contraindicated, palliative treatment may be the only type available. With the advent of local anesthesia and the intelligent choice of the vaginal route for operative work, the number of advanced cases not available for surgery should be reduced to a minimum.

Indications for surgical treatment vary with the individual case. The age, general condition and marital and social status of the patient must be taken into account. The best laid plans may be balked at operation and the best operator will be he who knows the anatomy and mechanisms involved, and can proceed to work on the immediate indications, rather than on a detailed, preconceived plan.

The aim of surgical procedure should be to restore, in so far as possible, the integrity of the primary supporting structures, and to restore to the prolapsing organs the mechanical advantage with which they were endowed in the normal position.

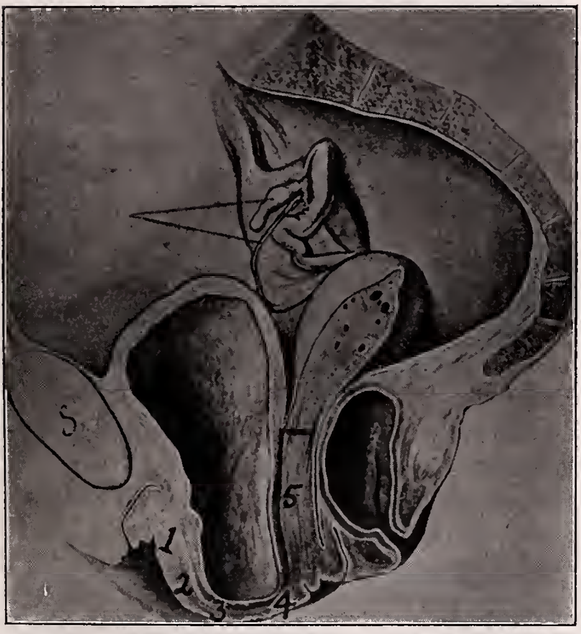

Fig. 5. (Halban and Tandler.) Advanced cystocele with prolapsus uteri. The cervix is at the vulva. After reduction on straining the cystocele will appear as indicated by the numbers. The sphincter ani is the only muscular structure apparently functioning in the perineal region. In this case the rectocele is controlled by the uterus in the nearly inverted vagina.

We will not attempt a detailed discussion of operative procedures in this paper. The accompanying illustrations represent fairly well the more common conditions seen at operation (figs. 4 and 5). Putting aside such pertinent considerations as the patient's age, marital condition, general health, etc., all of which must be clearly evaluated, we will consider only the actual local pathology as indicating the choice of operative procedure.

Figure 4 shows an incipient cystocele. The weakness here is in the tissue supporting the base of the bladder, between it and the anterior vaginal wall. In this section the tendency to prolapse of the uterus is evident only in the retroversion. Except as indicated, the pelvic floor is intact. Such a case, per se, would not require operation and might yield to the palliative measures mentioned above.

Figure 5 shows a further degree of the relaxation begun in fig. 4. The bladder has forced itself as a diverticulum into the anterior vaginal wall, and this diverticulum with its overlying mucous membrane has slumped into the vulva, forming a soft bulging tumor immediately below the meatus. The mucosa in this case will be protruded as indicated by the numbers, the mucosa at 1 being the first to appear. The uterus, retroverted and retroflexed, has slid down, bringing the cervix nearly to the degree of procidentia. A cystocele of this magnitude is perhaps more frequently seen associated with less prolapse of the uterus.

At or near this stage symptoms generally cause the patient to present herself for operation. In such a case, uncomplicated, the requirements of good surgery can be most successfully met. The nearest approach to restoration of the primary supports can be attained through some modification of the advancement operation. Through an incision over the cystocele the bladder diverticulum is freed well up to the urethra anteriorly, and dissected free from the cervix behind. It is then elevated and fastened higher up on the wall of the uterus by whatever method seems most appropriate.

Some operators actually stitch the bladder wall to the uterus, attaching a point at, say 3 (fig. 5) to a point at 5 on the uterus. Others accomplish this by drawing in tissues from the sides of the cervix, pushing up the bladder, and sewing this fascia to the uterus in the midline, or by putting a purse string suture about the base of the cystocele, and turning it in. Another method consists in actually grasping the broad ligaments at the sides of the cervix, and drawing them together in front to accomplish this support. Operations which draw the tissue from the sides of the cervix to the midline are of more value, because they give firmer support to the bladder, tighten the lateral supports of the cervix, and increase its posterior tendency, making it easier for the fundus to tip into anteversion. Where the degree of uterine prolapse is advanced, the success of the operation will be largely dependent upon the success of this procedure.*

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* Plastic work on the cervix is frequently advisable and, if intelligently performed, can be of assistance in securing a neat result in the advancement operation. Amputation is frequently indicated, especially where there is an elongated or enlarged diseased cervix. This work is probably best left till closure of the vaginal mucous membrane is intended, for the shaping of the lips will be important in securing a neat closure.

A good perineorrhaphy, next, will reestablish the buttress of the perineum against the descending cervix. The integrity of the centrum tendineum (perineal body) will restore the function of the lateral and posterior fibrous supports inserting here. The levators and constrictores vaginæ will again be in a position to function normally. As nearly as possible, then, the operator will have reestablished the normal supports from below.

It remains to restore the mechanical advantage gained by the normal position of anteversion. Provided the procedures described above have been carefully carried out, the operator will expect to find, on opening the abdomen, that the uterus has been returned to almost its normal level in the pelvis. Not infrequently the fundus will have been swung forward by the action of the restored posterior supports, together with the posterior tendency imparted to the cervix by drawing the lateral fibrous tissue to the midline anteriorly. It will only be necessary to complete the tendency to anteversion by one of the accepted round ligament plication operations (Baldy Webster, Coffey) and to emphasize the posterior tendency of the cervix by plicating the peritoneal folds (so-called uterosacral ligaments), extending from the dorsum of the cervix to the sacral alæ through the pouch of Douglas.

These procedures, with appropriate modifications, may be applied to very much more advanced grades of prolapse. In general, however, and especially where the quality of the supporting tissue is poor, advanced cases are more successfully treated by other means. Where further pregnancy can be excluded, the Watkins interposition operation may be of great value. Those who have used this operation extensively point out that it is inadvisable, where the operator is likely to meet complications such as large fibroids, adhesions, old inflammatory masses and the like. Also, it is apt to fail where there is a very small uterus (generally senile). It is nearly ideal in severe uncomplicated cases of prolapse, having a normal sized or slightly enlarged fundus. It is contradicated by the possibility of further pregnancy.

The idea of this operation is mechanically if not anatomically sound. Through an incision over the cystocele, the sac is exposed to the base of the urethra. The base of the bladder is then separated from the anterior wall of the cervix and uterus, until the peritoneum in the uterovesical pouch is exposed from below. This is opened, and the anterior wall of the uterus drawn down into the opening a little at a time until the top of the fundus is exposed. The pouch of the bladder is tucked up behind and above the fundus and attached to it here. On freeing the fundus, it can be seen to push the base of the bladder back and up, and to interpose an effectual barrier to further prolapse. When the mucous membrane is trimmed and approximated, the upward tendency of the fundus assists in maintaining a short, firm, anterior vaginal wall. The fundus is anteverted far beyond the normal and it is argued that the twist imparted to the lateral ligaments causes the cervix to be lifted and more firmly held. This operation should always be reinforced by a perineorrhaphy.

In theory much can be said against the interposition operation. In practice, on selected cases, it has proven of unequalled value. Some operators proceed, having drawn down the fundus, to do a complete vaginal hysterectomy, attaching the top of the vagina to the broad and round ligaments and fascia at the base of the broad ligaments. Such a procedure may be practical and necessary, where a uterus unsuitable for transposition is unexpectedly found at operation. It is not widely used, perhaps because of the skill required to perform it with constant success. A study of the statistics of this operation, even in good hands, shows a very high mortality, and indicates that the percentage of cures is no higher than with the less radical procedure.

Until comparatively recently abdominal hysterectomy has been widely used in these cases. It is not uncommon even now to see cases in which the fundus has been removed, and a large boggy diseased cervix left, with little or no fixation from above, and no attempt at reinforcement from below. A recurrence of the prolapse is almost certain, and subsequent operation is greatly complicated. Abdominal hysterectomy can only be successful, where firm fixation is made from above. Recurrences have been noted even in cases where the cervical stump or vagina has been fixed to the abdominal wall. Abdominal wall fixation is cumbersome and dangerous, and should be attempted only by operators who have perfected themselves both in the technic of the operation and in the selection of proper cases. If abdominal hysterectomy is necessary, it is probably quite as safe to depend on intelligent use of the ligaments and fascial supports of the uterus itself to hold up vagina and cervix.

Cases are also too frequently seen, in which a simple puckering operation of the mucous membrane over the cystocele has temporarily ameliorated the symptoms, and an attempted perineorrhaphy has pulled together the skin and fascia posteriorly, holding back the cervix for the time being. Nothing has been done to meet the real surgical indications.

These operative failures emphasize the importance of a careful study of each case both before and at the time of operation. Rarely will identical procedures suffice in any two cases. The best operator will be he who understands most clearly the mechanisms involved, and can operate on the immediate indication rather than by routine.

Much of the success of the vaginal work depends upon the perineorrhaphy. It is important to remember that a midline tear, having ruptured the skin and adjacent mucous membrane and fascia at the fourchette, penetrates the tissues of the urogenital trigone. The insertions of the small muscles of this structure and the continuity of the fascial layers are destroyed. Relaxation of the constrictores vaginæ, with retraction, causes gaping of the introitus. Further extension of the tear ruptures the intercolumnar fascia binding together the bodies of the pubococcygeii muscles, frequently damages the muscles themselves (lateral extension) and may involve the rectovaginal fascia. The sphincter ani is next involved, and the tear may extend beyond into the rectal wall.*

In the primary repair of injuries to the perineum the vaginal wall tears are first dealt with. A good firm approximation of mucous membrane and fascia is important in the prevention of high rectocele. Next, the efficiency of the levators must be restored, and the perineal body repaired.

The type of injury to the levators must be determined. A midline tear most frequently ruptures the raphe binding the bodies of the pubococcygeii together, allowing a diastasis. Repair consists in drawing the muscles very firmly together again in the midline. Lateral or mediolateral tears are more apt to involve the muscle bodies, but an accompanying diastasis is the rule. The indication is to repair the muscle body as well as to correct the diastasis. It is most important that the initial union be secure.

Experience teaches that careful and firm approximation of the fibrous tissue in this centrum tendineum is important, and special effort should be made to grasp and draw back to this structure the ends of the constrictores vaginæ muscles, which will have retracted anteriorly beneath the lower ends of the labia majora. The sutures here must be close together and include plenty of good firm tissue, and the approximation must be exact, with no remaining dead space. This step is important not only in the reestablishment of a snug introitus, but is the *best insurance against breaking down of the repair.*

The secondary repair of perineal injuries should follow the same general plan and no routine procedure will suffice. There is frequently question as to the advisability of repairing the perineum when a subsequent pregnancy is contemplated. It should not be contraindicated unless the pregnancy is in progress or intended at an early date, and even so may be advisable. Even a recent perineorrhaphy may withstand the effects of an easy labor. The amount of expected relief and the patient's social condition will assist in the decision.

The same question arises in connection with other operations for prolapse. The interposition operation is, of course, out of the question. We know of a case, however, in which this operation was performed by capable operators, and the patient subsequently went to term and delivered normally.

With proper care and granted a good operative result, a round ligament anterior suspension of the uterus will withstand the effects of one or more labors. We have had the opportunity to observe several such cases, in one of which, due to irregular menstruation, a pregnancy in the first month was overlooked and the operation performed. We have not noted a recurrence of the retroversion or any harmful effect on the pregnancy. Trachellorrhaphy, amputation and Sturmdorf resection of the endocervix have been frequently observed in labor. In two cases, one a Sturmdorf and one simple amputation, dilatation of the cervix was notably retarded, but not sufficiently to seriously affect labor.

In this paper the attempt has been made to indicate the type of work being done in connection with prolapse of the female genitalia and to emphasize the present day conceptions of the anatomy, mechanism of support and of prolapse. It is fair to say that the general principles laid down, especially those of operative procedure, are representative of the teaching of the great majority of better known gynecologists. To those who do not apply in at least a general way the same principles, we can only point out that they are going against the current, or else are sticking fast in the mud of indecision, fearing to break away into more progressive trends.

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* The observation has been made and corroborated in our experience, that where the pubic arch is narrow, the head in labor is forced back on to the perineum and deep tears result. On the contrary, in women who have a wide pubic arch examination reveals more frequent injury to the cervicovesical fascia, with cystocele, frequently unaccompanied by rectocele or notable injury to the perineum.

PAPILLARY CYSTADENOMA OF THE OVARY*

CLINICAL AND PATHOLOGIC ANALYSIS OF ONE HUNDRED CASES

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Papillary cystadenoma of the ovary is a neoplastic disease characterized by latent symptoms, variable course, uncertain prognosis and unusual pathologic manifestations. This statistical and pathologic study was undertaken in order to ascertain the results of treatment and to determine, if possible, on what factors prognosis could be based. The material studied consisted of the clinical records and the tumors in 100 cases, in which operation had been performed at the Mayo Clinic from 1915 to 1924.

ETIOLOGY

The remarkable embryologic stages through which the ovary passes, its complex structure, and functional and hyperemic changes influence the formation of cystadenoma. However, definite information concerning the etiology of the lesion is as yet unavailable. All ages are susceptible to the disease. Wiel, in a study of sixty cases of ovarian tumors occurring in children ten years of age and younger, found 8.4 per cent to be papillomatous or carcinomatous. Kelly and Sherwood reported three cases in patients more than seventy years of age, the oldest being seventy-six. In my series the average age was forty-seven and six-tenths years; the youngest was twenty-one and the oldest sixty-nine. Eighty-nine of the patients had been married and eleven were single. Twenty-eight had no children; in one case fecundity was not mentioned. Eighteen had had one or more miscarriages. Schwartz says, "Papillary cystadenomas are found more frequently in multiparæ between the ages of forty-five and fifty-five, making up about 49 per cent of the total; less frequently in nulliparæ and rarely in young children."

Kelly found that 13.3 per cent of 555 ovarian tumors were of the papillomatous type; Ewing calculated from the 200 cases of ovarian tumors of Martin and Libbert that 55 per cent were cystadenomous. MacCarty and Sistrunk reported that 16.3 per cent of 1000 ovarian cysts were papillary cystadenomas; and Erdmann and Spaulding that 18 per cent of 200 cystic ovarian tumors were papillary cystadenomas. The frequency, therefore, according to the foregoing observers, varies from 13.3 to 55 per cent of all ovarian tumors, and from 16.3 to 18 per cent of all cystic ovarian tumors.

HISTOGENESIS

Although a great amount of work has been done in an attempt to understand the histogenesis of ovarian cystadenoma, no definite conclusion has as yet been reached. Many theories have been advanced in connection with their development and every embryologic structure in the ovary has been considered as a possible source. Until the time of Virchow it was assumed that all cystic formations of the ovary were due to an enlargement of the graafian follicles. In 1848 his investigations of ovarian colloid led him to believe that the graafian follicle produced only simple cysts and that the cystomas originated from colloid degeneration of the ovarian stroma.

Opposed to this view was the theory of epithelial origin of proliferating cysts held by Waldeyer and his followers. Waldeyer's work, based on the anatomy and development of the ovary, was reported in 1870. He traced the origin of the cystoma to Pflüger's tubes, which were considered to be either remnants from fetal life or newly formed in the adult by the ingrowth of surface epithelium. From the fact that these growths often contained ciliated epithelium and grew within the folds of the broad ligament, Olshausen concluded that their development was in some way connected with the parovarium.

Nöggerath, in reporting his observations on the histogenesis of ovarian cystomas, stated that in a certain number of instances the epithelial tubes found in ovaries as precursors of ovarian cysts did not originate from the germinative epithelium, but from the tissues composing the capillaries.

The origin of overian cystoma in the graafian follicle has long been a popular theory but still lacks definite proof. Williams, in his studies of papillomatous tumors of the ovary in 1893, concluded that papillary growths are either derived from the graafian follicle or germinal epithelium and that their origin from the wolffian bodies or from the tubal epithelium, while possible, has yet to be demonstrated. In support of his belief he presented a branching papillary outgrowth originating from the graafian follicle.

Walthard demonstrated the downward growth of surface epithelium forming cords, tubes and cysts. Several varieties of ciliated cell-groups were found in the cortex and connected with the surface epithelium. Most of these atrophied, but others resembling misplaced fetal tissue went on to develop cystomas of various types. It appeared from Walthard's observations that the probable sources of these tumors were not to be identified with Pflüger's tubes, but with congenitally misplaced groups of cells.

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MacCarty, in his study of benign and malignant tumors of the ovary, found a small ovarian cyst with a lining containing three distinct features; the many-layered epithelium of the graafian follicle and simple cyst, the columnar epithelium of the cystadenoma, and the papilloma of the papillary cystadenoma. He concluded from his observations of carcinoma of the breast that the cells of the stratum germinativum were the direct progenitors of the carcinoma cell, and that, in conditions in which a demand was made for the replacement of differentiated cells, epithelial hyperplasia of the germinative cells occurred which proceeded, in some instances, to carcinoma formation. Finding a similar stratum germinativum in graafian follicles and in simple cysts, and similar stages of epithelial hyperplasia in graafian follicles, simple cysts, cystadenomas and carcinomas of the ovary, he was led to believe that the histologic process might be the same in each, and that cystadenoma, therefore, develops from simple cysts or the stratum germinativum of the ovary by hyperplasia of the lining epithelium, as indicated in the case of the cyst just mentioned.

Goodall, in 1920, reported his study of the ovaries of 127 patients of all ages from a few hours to eighty years and of five human embryos; he had made 15,000 sections, mostly serial, from the ovaries of the cow, pig, sheep, cat, mouse, rabbit, guinea-pig and dog. He states that, "it has been shown through embryologic studies that the ovary at some time in its development possesses a system of tubules, which have their exact homologues in the seminiferous tubules and excretory ducts of the testicle. Embryologic studies have also shown that all the structures within the ovary, namely, Pflüger's tubules or cords, the medullary cords, and the rete ovarii, to well outside the boundary line of the normal ovary, are of germinal epithelial origin; and it has been demonstrated that the tubules of the epoöphoron, or of the wolffian body, do not penetrate into the ovary, but are met outside the ovary by the rete ovarii as it passes out of the hilus." His observations led him to the conclusion that all epithelial structures within the ovary are derived from the germinal epithelium and that all epithelial tumors of the ovary (except those few which are classified as inclusion tumors) take their origin either directly or indirectly from this epithelium. However, he was unable to determine which cells of the germinal epithelium gave rise to a specific group of tumors. Excluding the condition known as hydrops folliculi, he does not believe that tumors can arise from the graafian follicle in the process of development or degeneration and, moreover, that there is not one case in the literature of a graafian follicle having been supposed to show developing papilloma that will stand the test of scientific criticism.

SYMPTOMS

In my series the symptoms were usually late in appearing and were dependent on the size of the tumor and whether perforation of the capsule or torsion of the pedicle had occurred. While the symptoms were noted by the patient on the average one year and ten months, the duration varied from a few days or months to several years. They were entirely lacking in some cases, even when the tumor was large enough to appear above the pubes. In six cases, in which examination was undertaken because of symptoms referable to other disease, the ovarian tumor was an incidental finding. The presence of an abdominal tumor was the most common complaint. Other complaints in the order of their frequency were abdominal pain, loss of strength, pelvic distress, menstrual irregularity, and indefinite vesical and gastrointestinal disorders.

Fifty per cent of the patients experienced pain. It was usually described as a one-sided, lower abdominal or pelvic, dull, aching, bearing-down pain of moderate severity, associated with a sensation of weight in the pelvis, heaviness, tightness or fullness. Drawing or dragging backache with attending pain in the region of the hip or thigh often accompanied the abdominal or pelvic pain. In some instances the pain was more severe and described as intense, burning, throbbing, cutting or stinging.

Twenty patients gave a history of acute attacks of abdominal pain, sharp, knife-like, griping or cramping in character. A few of the attacks were of such severity as to force the patient to bed and to require narcotics for relief. Abdominal tenderness was complained of by a comparatively small number of patients, and when present was usually mild, even when the tumor was large.

Forty patients recognized the presence of an abdominal tumor. In most cases growth was said to have been slow and gradual for years. Eleven patients had noticed a rapid or increased rate of growth for a short time after a longer period of slow growth. In one case the tumor had been known to exist for ten years; in other cases its presence was known only for a few days. The average known duration of the tumor was one year and five months.

Menstrual irregularity occurred in 52.5 per cent of the cases in which the menopause had not taken place. Menorrhagia and metrorrhagia were the types of irregularity most often encountered. Diminished flow and leukorrhea were mentioned by a few patients and three had experienced profuse hemorrhage.

One-half of the patients had mild or moderately severe vesical symptoms. Frequency, pressure and fullness, dysuria, burning and scalding, were the common types. In one case incontinence of urine had occurred and in two retention.

Indefinite gastrointestinal complaints, such as anorexia, nausea, flatulence, belching, fullness and bloating were frequently mentioned. Constipation was prevalent and in a few instances the condition became definitely aggravated with the appearance of the tumor. In one case the stools were ribbon-like, and in another defecation was impossible. In 16 per cent of the cases vomiting occurred usually with acute attacks of pain or with symptoms of intestinal obstruction.

PHYSICAL EXAMINATION

In 25 per cent of the cases the patients were well nourished and generally of healthy appearance. Some had lost so much strength as to be seriously handicapped; others were anemic, emaciated and disabled. Fifty-two had lost weight and eleven had gained. Marked abdominal distention (fig. 1) with dyspnea was evident in some cases. An abdominal tumor was demonstrable in sixty-nine cases and ascites in twenty-one. In thirty-one cases the abdominal tumor extended to the level of the umbilicus or above, and in twenty-two it was found midway between the pubes and navel. In some cases it filled the entire abdomen, giving rise to unusual dimensions, while in others it was so small that it was confined to the pelvis. The tumor apparently often originated from the left side of the pelvis. Most of the tumors were firm, rounded and smooth, but some were hard, irregular, and fixed to adjacent structures. The cystic nature of the tumor was evident in nineteen. It was impossible to determine whether the others were cystic because of the tenseness of the tumor, great amount of ascites, or thickness of the abdominal wall.

By pelvic examination is was possible in most instances to separate and identify the tumor from the pelvic organs. In some cases the tumor filled the pelvis and was so firm that it was difficult to recognize the cystic character of the growth or other details of its gross structure. Here again when a decision could be made, the left-sided tumor was found more frequently. The tumor was fixed to surrounding organs in some cases, and in others it was tender. When the uterus and tumor could not be differentiated, the tense, firm, irregular surface of the tumor was often thought to be that of a uterine fibromyoma. A pelvic tumor was recognized in 67 per cent of the cases.

DIAGNOSIS

A clinical diagnosis of cystadenoma of the ovary was not certain in all cases, although the true nature of the lesion was often suspected and a definite diagnosis made in a few instances. The tumor was diagnosed as average in fifty-three cases (forty-one times as a cystic tumor and twelve times as an ovarian tumor). A diagnosis of cystadenoma was made in eleven cases. Ovarian cyst was diagnosed in twenty-six without reference to type, and in four the diagnosis was malignant ovarian cyst. The diagnosis was made in forty-seven cases without reference to the ovary, although certain facts noted in the history and physical findings implied its relationship. In this group pelvic tumor was diagnosed

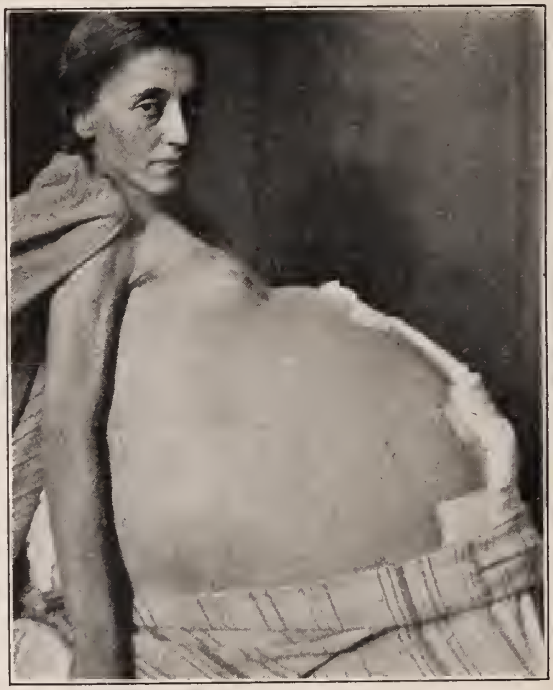

Fig. 1. Huge papillary cystadenoma of ovary. Patient weighed 277 pounds. Weight of tumor 157.5 pounds.

in twenty-four; in four of these it was believed to be due to infection, in four it was considered cystic, in four malignant, and in twelve the type of pelvic tumor was not mentioned. The greatest difficulty was encountered in differentiating cystadenoma and uterine fibromyoma. Fibromyoma was the operative diagnosis in fourteen cases. In five either ovarian cyst or uterine fibromyoma was diagnosed. One was called an abdominal cyst, one abdominal carcinoma, and two malignant disease. A cystic tumor in the abdomen or pelvis was referred to in the diagnosis in fifty cases.

SURGICAL DATA

According to the surgical records the tumor was bilateral in forty-five cases and unilateral in fifty-five. Bilateral oöphorectomy was performed in seventy-two cases, unilateral in twenty-seven; in the remaining case abdominal exploration was carried out. Fourteen of the unilateral operations were performed primarily and thirteen secondarily to other procedures. Four operations were considered palliative. The means by which recurrence might possibly take place were sought in the surgical data. In forty-two instances it was found that the capsule of the tumor had been perforated and in eleven instances that the perforation occurred in the attempt to remove the growth. Cyst contents and tumor particles, therefore, were probably left behind in these cases. Tumor tissue was found widely scattered throughout the abdominal cavity. It was present in the peritoneum, omentum, mesentery, intestines, diaphragm, liver, lungs, and in the inguinal and retroperitoneal lymph nodes. General metastasis from papillary cystadenoma, while rare, is more common than the literature would indicate.

Wagner's case, in 1863, quoted by Williams is probably the first on record. The patient, aged forty-eight, had been tapped sixty-two times over a period of ten years on account of an ovarian tumor; at necropsy following death from pneumonia, papillary metastatic tumors were found below the left breast, and in the left flank and right axilla. Bland-Sutton reports a case in which he removed bilateral papillary cysts and the uterus. Six years later he removed a tumor from the right side of the sternum which contained papillomas exactly like those found in the primary cysts. The growth at the sternum quickly recurred and the whole manubrium was eroded by it. When the patient died, the large recurrent mass filled the superior mediastinum and the upper part of the right half of the thorax. There was no evidence of recurrence in the abdomen.

Implants were found on the peritoneum and pelvic and abdominal viscera in twenty-seven cases, extension to adjacent structures in thirteen, and metastasis to lymph nodes in four. Ascites was noted in thirty-one. In twenty-six cases the tumor was markedly adherent to surrounding tissues; in two the pedicle was twisted. Pregnancy was present in one case and probably present in another. The ureter extended over the top of the cyst in one case so that its lumen was partially obstructed; proximal dilatation to five or six times normal size resulted. In another case ureteral dilatation was caused by pressure of the cyst on the ureter. In one case adhesion to the sigmoid caused intestinal obstruction. In one case the tumor contents escaped through a fistula leading into the tumor. Once the ileum was involved and 40 cm. of intestine had to be resected with the tumor. In one case besides the ovarian tumor there was a carcinomatous intraductal papilloma of the breast. One aberrant ovary attached to the distal end of the fallopian tube and entirely separate from the normal ovary gave rise to a cystadenoma.

PATHOLOGY

In the pathologic laboratory the tumor was found to be bilateral in forty-three cases and unilateral in fifty-seven; in two instances a tumor that was called cystadenoma by the surgeon proved to be a simple cyst. A pathologic diagnosis was not obtainable in twelve cases in which operation was performed elsewhere, except that given by the patient; in two instances this was ovarian cystadenoma. The known number of bilateral tumors, then, was forty-three and of unilateral fifty-seven. Whether the cystadenoma is bilateral or unilateral cannot be accurately determined from surgical specimens, since it is not always possible to ascertain the character of the tumor removed by another surgeon and because it is not possible to be sure of the absence or presence of a small cystadenoma in an ovary left intact at operation. Ewing reports that papillary cystadenoma affects both ovaries in 60 per cent of the cases either as primary tumors or through implantation. Of the fourteen cases in which primary unilateral oöphorectomy was performed for cystadenoma a similar tumor was found later in the opposite ovary in one case.

Grossly the tumors were rounded cystic bodies, presenting pedunculated attachments or areas of vascular and fibrous tissue formerly part of an adhesive mass joining the tumor to adjacent structures. On the surface tense, lobulated areas were

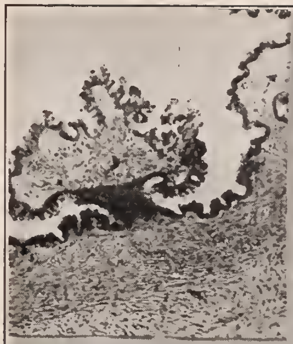
FIG-2

Fig. 2. Group 1. Early papillary formation, showing cuboidal epithelium and well defined line of demarcation between epithelium and stroma.

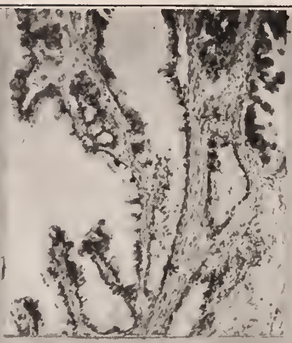
FIG-3

Fig. 3. Group 1. Columnar epithelium distended with secretion; papillary and alveolar formation.

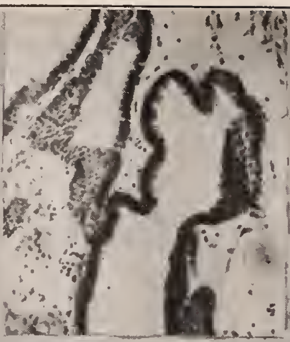
FIG-4

Fig. 4. Group 1. Cuboidal epithelium in alveolar formation. Ovoid nuclei appear at the bases of the cells. Stroma edematous.

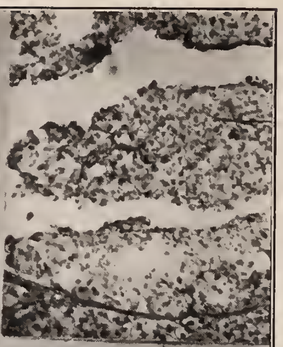
FIG-5

Fig. 5. Group 2. Advanced hyperplasia of vacuolated atypical epithelial cells in papillary formation. Stroma nearly obliterated.

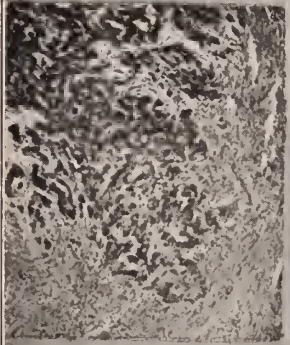
FIG-6

Fig. 6. Group 2. More active type of tumor. Invasive growth of undifferentiated epithelium after perforation of the basement membrane.

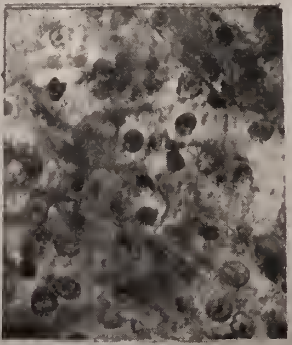
FIG-7

Fig. 7. Group 2. Undifferentiated spherical and ovoidal cells of papillary cystadenoma of the ovary. Numerous nucleoli and mitotic figures visible.

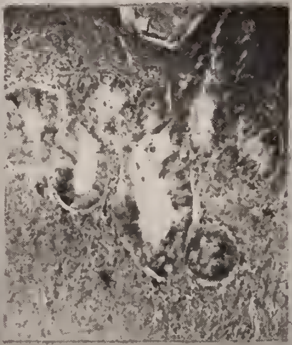
FIG-8

Fig. 8. Group 3. Papillary adenocarcinoma invading the stroma.

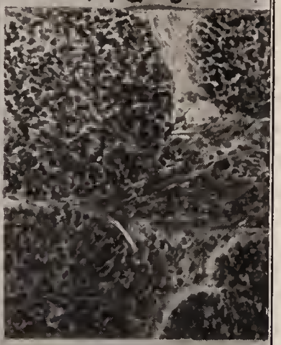
FIG-9

Fig. 9. Group 3. Papillary adenocarcinoma. Acini filled with hyperplastic undifferentiated epithelial cells.

mingled with soft translucent portions. Frequently perforation by extension of the growth through the cyst wall gave rise to extracystic masses, implants, extensions or metastatic tumors. Most of the tumors were large but they varied greatly in size. The smallest was 1.5 cm. in diameter, and the largest weighed 157.5 pounds. On section a large cyst with numerous peripheral cavities was usually found. Small or large solid areas as well were present in some. Papillary formation occurred either as small scattered projecting nodules, fine densely packed papillæ, or larger thin-walled grape-like clusters growing intracystically or extracystically. The cyst contained clear straw-colored or gelatinous fluid, sometimes modified by blood or cell detritus.

The histologic data divided the tumors into three groups. In Group 1, types of which are shown in figures 2, 3 and 4, there were layers of cuboidal or cylindrical epithelium either granular or distended with secretion and supported by an abundant stroma uniform in its cellular density and arrangement.

Group 2, represented in figures 5, 6 and 7, presented evidence of varying degrees of malignant change. In areas of the less active tumors of this group hyperplastic epithelial cells were found with an increase in number of cell layers, arranged in papillary or glandular formation, while in other areas well differentiated epithelium was present which at times appeared to be in a transitional stage from benign to malignant. In the more malignant tumors of this group the evidence of malignancy was more definite and uniform. A greater degree of hyperplasia resulted in mass formation of atypical cells about the papillæ and alveoli. The basement membrane separating the papillary and alveolar structure from the stroma was often broken and the stroma invaded. The third group, shown in figures 8 and 9, consisted of invasive growths of undifferentiated cells in the form of papillary adenocarcinoma. The nuclei of many of these cells contained mitotic figures. The stroma in the malignant tumors presented an increase in cellular density with areas of fibrosis and hyalization concentrated about the epithelial tissue, forming short or long branching strands which often communicated with one another.

Thirty-six tumors, showing but little evidence of malignant change, were classified as belonging to Group 1; fifty-seven, showing varying degrees of malignant change, to Group 2; and seven, showing adenocarcinomatous change, to Group 3. In subsequent reference to these groups the first is spoken of as of low-grade malignancy and the second and third groups, since both represent malignant tumors, as of high-grade malignancy.

RECORD OF POSTOPERATIVE LIFE

Record of the postoperative life of seventy-seven patients was obtained by letters from them, their relatives or friends. Twenty-three patients could not be traced. Thirty-eight were living (thirty-four without recurrence, one with known recurrence, and three with possible recurrence). The average postoperative interval of those living was seven years and six months. One was living ten years and ten months after operation. Thirty-nine patients were dead; twenty-seven from recurrence, five as the direct result of the operation, five from unknown causes, one from cardiac disease and one from influenza. The average interval before recurrence of symptoms was one year and eight months, and the average period between operation and death from recurrence was two years and two months. Forty-four per cent of the patients were living without known recurrence and 35 per cent were dead as the result of recurrence.

RELATIONSHIP OF PERFORATION OF THE CAPSULE TO THE DEGREE OF MALIGNANCY

Extracystic tumor growth, implants, extension to other structures, perforation or rupture of the tumor, and metastasis occurring alone or in combination were present in fifty-eight cases, in thirty-eight of which the malignancy was of high grade and in twenty of low grade. The known fact that actively growing portions of tumor tissue became extracystic and nonencapsulated provided conditions which made possible the continuance of the disease or the recurrence of it. Moreover, the presence of implants or metastatic tumors may have been unrecognized at operation. In twenty-one of the twenty-seven cases in which death was due to recurrence the capsule had been found perforated and in six it had not. In nineteen of the twenty-one the tumor was of high grade malignancy and in two it was of low grade. In the remaining six, in which the capsule was not recorded as having been perforated, the malignancy was of high grade. The effect of the combination of grade of malignancy and perforation is illustrated by the contrasting statistics. When perforation occurred in the presence of low-grade malignancy, 75 per cent of the patients survived without recurrence; when perforation occurred in the presence of high-grade malignancy 50 per cent of the patients succumbed to recurrence of the neoplasm.

It is not assumed that the degree of malignancy is a factor in bringing about recurrence of this type of tumor, providing it is removed intact without a perforated capsule, unless a papillary adenocarcinomatous change has occurred. In this series there were six cases in which, although the capsule was not recorded as having been perforated, recurrence caused death. In all of these the malignancy was of high grade, but not of the papillary adenocarcinomatous type. Therefore, it seems probable that tumor tissue was present outside the capsule but not recognized by the surgeon in these instances. In spite of this fact three and one-half times as many patients died from recurrence in the group in which the capsule was perforated as in the group in which it was not known to have perforated, and twelve and one-half times as many patients died from recurrence when the malignancy was of high grade as when it was of low grade.

TREATMENT

Exploratory laparotomy is indicated in every case of ovarian tumor in order to establish the diagnosis (if the general condition of the patient permits), for the smallest tumor may be malignant and the largest may be of low-grade malignancy and well encapsulated. The progress of the disease may be slow, and years may be added to the life of the patient by removal of the primary growth, even when extensive peritoneal implantation has occurred.

The tumor should be removed intact whenever possible for there is no way of distinguishing the benign from the malignant except by microscopic examination. Regardless of the size of the tumor, in operable cases tapping is contraindicated for fear of contaminating the peritoneum with the fluid of the cyst and the tumor cells in it. If the growth is localized, removal is simple, but if it is extensive, removal may be difficult and entail panhysterectomy and occasionally resection of the intestine with portions of infiltrated omentum and parietal peritoneum. In many cases of recurrence tapping will be necessary from time to time as a palliative measure to relieve the intraabdominal tension.

When the tumor is unilateral, one ovary and tube should be retained in the child-bearing age unless the disease is disseminated or shows a high degree of malignancy. However, if one ovary is left in position, it should be periodically examined for possible tumor formation.

It is generally agreed that, if the growth has been incompletely excised, the patient should be given the benefit of roentgen-ray and radium treatments because of the sensitiveness of ovarian tissue to irradiation and the relatively low degree of malignancy of these tumors. However, Wood reports that in the postoperative treatment of papillary adenocarcinoma of the ovary the symptoms were abolished in a number of cases for a long time following the use of large doses of roentgen rays. In other cases, in which the tumor was morphologically similar, death occurred within a few months with extensive peritoneal involvement, despite irradiation.

PROGNOSIS

The prognosis depends on whether the capsule of the tumor is perforated, the histologic evidence of malignancy of the tumor, and the extent of involvement of surrounding tissues. If the tumor is removed with the capsule intact, the chance of recurrence is small, regardless of the degree of malignancy found. Thornton, in 1875, remarked that, as long as the epithelium was confined to the interior of an ovarian cyst, it was not of much importance pathologically, except as an indication that its removal should not be too long delayed. A cyst removed with its capsule intact does not lose its prognostic interest, however, for in the present series recurrence took place in six cases in which the capsule was said to be intact.

In some instances prognosis is uncertain because of the gradual transition from the precancerous to the malignant stage and the fact that a nonmalignant area and a malignant one may coexist. The presence of secondary nodules in the peritoneum, omentum or intestine is not to be taken as indicating hopeless malignancy. Their course varies with the general malignancy of the tumor. In a well-known group the metastatic nodules disappear after extirpation of the growth. This favorable outcome occurs almost exclusively, when the malignancy of the neoplasm is low grade and the lining epithelial cells are but slightly atypical.

In Thornton's case of ruptured papillary cystadenoma with extensive peritoneal metastasis the patient was living without evidence of the disease nine years after removal of the primary growth. Codman's report of forty-one cases with peritoneal metastasis at the Massachusetts General Hospital, in the last twenty-five years, however, would give the impression that the prospect was quite hopeless. He found that all but two of the forty-one patients died from the disease; and of this thirty-nine, twelve died in less than two months after operation, nineteen in less than six months, and twenty-nine in less than a year. In other words, 30 per cent died in less than two months, and 74 per cent in less than a year after operation. Schwartz, quoting Landau, states that of fifty-seven patients ten were well after nine years; Hohne that of thirty-four patients, eighteen were well after five years; Tuffier that 81 per cent were well after five years; of Schwartz' and Pollock's eleven patients, one was well after seven years, three after four years, and the remaining seven died within six months after operation.

The discrepancy in end-results is accounted for by the difference in histologic characteristics of the individual tumors. In the tumors of the group showing differentiated epithelial cells or early malignant change with or without perforation of the capsule or peritoneal implants the prognosis is good. In the group of tumors showing a more active and varied type of malignant epithelial change the prognosis is also good, if the tumor is removed with the capsule intact. If the capsule is perforated with or without peritoneal metastasis, the prognosis is doubtful. The prognosis is always bad in the papillary adenocarcinomatous group of tumors for this type preserves its destructive tendencies, even when the original tumor is removed. Although it is true that in many cases belonging to the last two groups the patient is living and apparently well, for a period of years after operation, it is not safe to count on a permanent cure with this type of malignancy present, for numerous cases of recurrence and death have been reported in the literature many years after operation.

SUMMARY

One hundred cases of papillary cystadenoma were investigated clinically and pathologically. Among the living patients the average period since operation was seven years and six months. One patient was living ten years and ten months after operation. In cases in which there was recurrence the average postoperative interval was one year and eight months, and the average period from operation to death from recurrence was two years and two months.

While the symptoms are variable and inconstant, there are in many cases certain points of similarity in the localization of the pain in the lower abdomen or pelvis, in its bearing-down character, its moderate severity, and in the sensation of weight or fullness in the pelvis. This type of pain with a history of pelvic discomfort, menstrual irregularity, indefinite vesical or gastrointestinal symptoms, together with the presence of a rounded, firm, cystic tumor in the pelvis or abdomen, is suggestive but not definite evidence of a papillary cystadenoma of the ovary. In 52.5 per cent of the cases investigated before the menopause there was some type of menstrual irregularity.

Ascites was present in 31 per cent of the cases and usually indicated an advanced stage with perforation of the tumor capsule and peritoneal implants.

The preoperative diagnosis is always uncertain and the tumor is frequently mistaken for uterine fibromyoma.

CONCLUSIONS

1. Papillary cystadenoma of the ovary varies in frequency from 16.3 to 18 per cent of all ovarian cysts.

2. The tumors are most probably developed from epithelial structures derived from the germinal epithelium.

3. Bilateral tumors are frequent, having been found in 43 per cent of the cases. Their exact number, however, can be only estimated from surgical specimens.

4. Roentgen-ray and radium treatment should be given in addition to the operative procedure in every case in which implantation or metastasis is found.

5. Even when it is not apparent that the tumor capsule is perforated, recurrence may take place from unrecognized implants or metastasis.

6. Disregarding the degree of malignancy present, 44 per cent of the patients lived without recurrence of symptoms for an average period of seven years and seven months, and 35 per cent of the patients died from recurrence within an average period of two years and two months after operation.

7. Prognosis depends on whether the tumor capsule is perforated, the histologic evidence of malignancy of the tumor, and the extent of involvement of surrounding tissues.

8. The following figures are based on an interval of seven years and seven months after operation:

If the capsule is perforated and the malignancy of the tumor is of low grade, a 15 per cent chance of recurrence exists. If the capsule is perforated and malignancy is of high grade, a 57.9 per cent chance of recurrence exists.

In 10 per cent of the cases in the group with perforation of the capsule and tumors of a low grade of malignancy, death is caused by recurrence; in 75 per cent the patient survives without recurrence.

In the group in which a tumor of a high grade of malignancy has perforated, 50 per cent of the patients die from recurrence and 15.8 per cent live without recurrence.

BIBLIOGRAPHY

1. Bland-Sutton, John: Tumors, innocent and malignant. 7 ed. London, Cassell and Co., 1922, 622-626.

2. Erdmann, J. F., and Spaulding, H. V.: Papillary cystadenoma of the ovary. Surg., Gynec. and Obst., 1921, xxxiii, 362-375.

3. Ewing, J.: Adenoma of the ovary. Neoplastic disease. Philadelphia, W. B. Saunders, 1919, 566-577.

4. Ewing, J.: Cysts and epithelial tumors of the ovary. Neoplastic diseases. Philadelphia, W. B. Saunders, 1919, 562-593.

5. Goodall, J. R.: The origin of tumors of the ovary. Surg., Gynec. and Obst., 1920, xxx, 249-264.

6. Kelly, E. A.: Papillary tumors of the ovary. Operative gynecology. New York, D. Appleton, 1906, ii, 294-304.

7. Kelly, H. A., and Sherwood, Mary: One hundred cases of ovariotomy performed on women over seventy years of age. Johns Hopkins Hosp. Rep., 1893, iii, 509-545.

8. MacCarty, W. C.: The histogenesis of cancer (carcinoma) of the breast and its clinical significance. Surg., Gynec. and Obst., 1913, xvii, 441-460.

9. MacCarty, W. C., and Sistrunk, W. E.: Benign and malignant ovarian cysts; a report of 1000 specimens. Surg., Gynec. and Obst., 1913, XVII, 41-51.

10. Noeggerath, E.: The diseases of blood-vessels of the ovary in relation to the genesis of ovarian cysts. Am. Jour. Obst., 1880, xiii, 1-17.

11. Olshausen, R.: Cyclopedia of obstetrics and gynecology. New York, W. Wood, 1887, viii, 68-73.

12. Schwartz, L. S.: Papillomatous cysts of the ovary (with a report of eleven cases). Am. Jour. Obst., 1918, lxxviii, 79-93.

13. Thornton, J. K.: Fungating papillomata of both ovaries. Tr. Obst. Soc., London, 1887, xxviii, 38-41.

14. Virchow, R.: Die krankhaften Geschwülste. Berlin, Hirschwald, 1863, i, 258-260.

15. Waldeyer, H.: Eierstock und Ei. Ein Beitrag zur Anatomie und Entwicklungsgeshichte der Sexualorgane. Leipzig, Engelmann, 1870, 74 pp.

16. Walthard, Max: Zur Aetiologie der Ovarialadenome. Ztschr. f. Geburtsh. u. Gynäk., 1903, xlix, 233-329.

17. Wiel, H. I.: A survey of ovariotomy at extremes of life. Report of a case in a girl aged five. Bull. Johns Hopkins Hosp., 1905, xvi, 102-109.

18. Williams, J. W.: Contributions to the histogenesis of the papillary cystomata of the ovary. Bull. Johns Hopkins Hosp., 1891, ii, 149-157. Papillomatous tumors of the ovary. Johns Hopkins Hosp. Rep., 1893, iii, 1-84.

19. Wood, F. C.: Recent cancer therapy. Can. Med. Assn. Jour., 1923, xiii, 152-159.

MUCOUS POLYPI OF THE CERVIX UTERI

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The numerous studies on the hyperplastic conditions of the endometrium that have been published in recent years have served to clarify many obscure points pertaining to the etiology and characteristics of uterine polypi. However, in pathologic conditions of the uterus it is customary to regard the corpus and the cervix as two separate organs, and it is questionable if polypi arising from the cervix should be considered as identical with those of endometrial origin. An attempt has here been made to study various clinical and pathologic aspects of cervical mucous polypi, considering the mas distinct entities.

One hundred consecutive cases, for which complete histories and the pathologic specimens were available, were carefully analyzed with the object of determining, if possible, (a) the pathologic characteristics, (b) age incidence, (c) symptomatology, (d) association with other lesions and (e) any clue as to their etiology.

PATHOLOGY

The gross appearance of these tumors is well known. They vary from a few millimeters to two or three centimeters in length, are pedunculated, usually pear shaped, soft, have a smooth surface and are of a deep red to a purple color. They usually arise from some spot in the cervical canal but sometimes from the external surface of the cervix and hang free either in the canal or down into the vagina. In this series 95 per cent occurred singly, 3 per cent of the patients had two polypi, and only two others had more than two. Once removed they have but little tendency to reappear and in only 4 per cent could a history of recurrence be obtained.

Microscopically they present the appearance of a hyperplastic condition of the mucous membrane from which they take their origin. They show the same surface epithelium, have a varying number of glands and a cellular connective tissue stroma. A very significant feature is the presence of many small blood-vessels which course throughout the whole polyp but are especially prominent near the surface and give the tumor its characteristic deep red color (fig. 1). Edema and extravasation of blood may be noted and there are a number of secondary changes which are frequently present and may alter the whole aspect of the picture. The most important of these are:

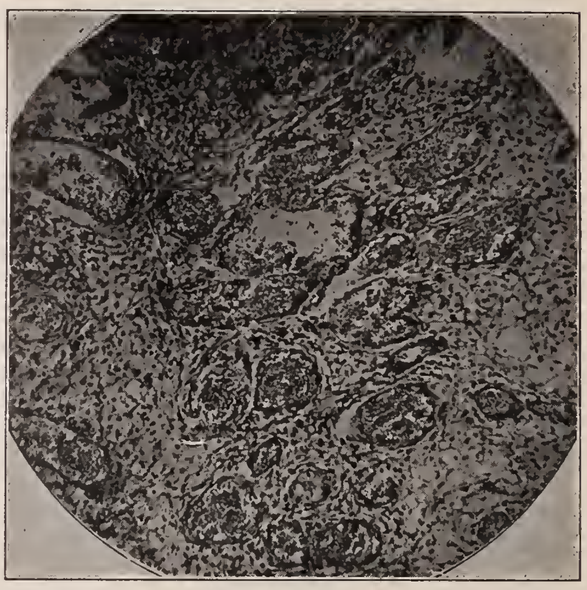

Fig. 1. Numerous bloodvessels in a polyp of the cervix uteri.

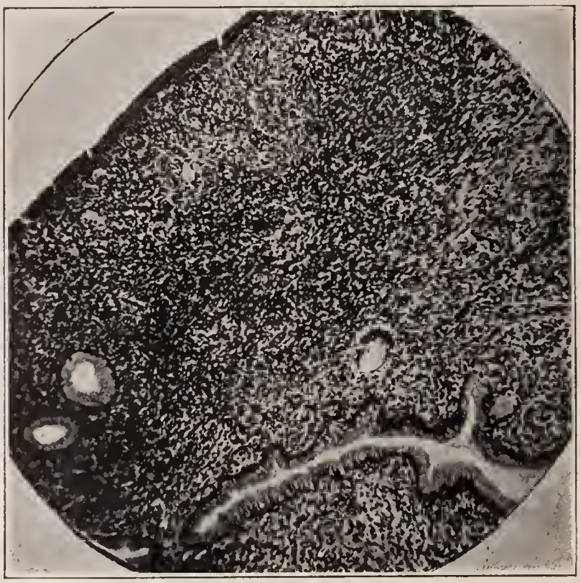

Fig. 2. Cervical mucous polyp. Infiltration with round and plasma cells.

1. Inflammatory reaction, evidenced chiefly by diffuse infiltration or localized accumulations of round and plasma cells, and noted in 65 per cent of the sections examined (fig. 2).

2. Cystic dilatation of the glands. This may be present in the polyp from the first or may arise secondarily, due to any factor, such as changes in the stroma, overgrowth of squamous epithelium, etc., which closes the openings of the glands and leads to an accumulation of the secretion. The cysts are identical with ovula Nabothii. They are filled with mucus and the lining epithelium has become thinned out so that the cells are of a low cuboidal type. Nineteen cases presented this feature (fig. 3).

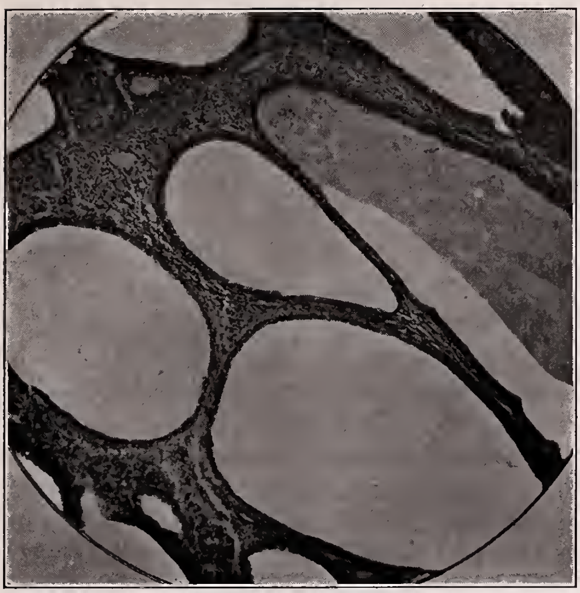

Fig. 3. Cystic glands in a mucous polyp of the cervix.

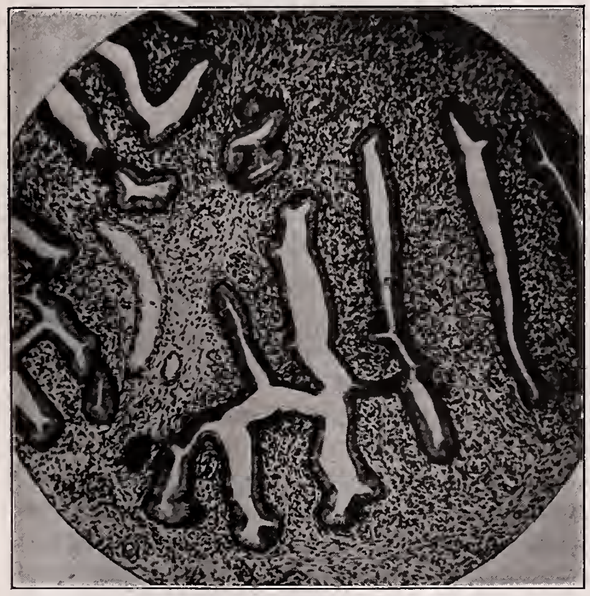

Fig. 4. Hyperplasia of glands in a mucous polyp of the cervix.

3. Hyperplasia of the glands. This may occur in some part of the polyp, very frequently at the tip, under the influence of a chronic inflammatory process and may result in the formation of papillary-like projections (figs. 4 and 5). This change is closely related to the polypous form of the so-called benign adenoma of the cervix which has been described by Moukayé,[1] and it is sometimes hard to determine the border line between the two conditions.

4. Changes in the surface epithelium. The polyp is covered by the epithelium of the tissue of its origin. That is, if it arose from the vaginal portion it is covered by stratified squamous, and if from the cervical canal, by cylindrical epithelium. The latter is by far the more frequent, but in many cases and particularly if the polyp is of long standing, there is a change from cylindrical to squamous. This usually occurs at the tip and extends toward the base. A great number of unusual types of epithelium, which represent various transitional phases of the process, are found on the surface and in the glands, and may simulate malignancy to a marked degree. They were first described by Küstner[2] in 1884, and later were analyzed in detail by Kaufman[3] and Oeri.[4] The problem as to whether we are dealing with a true metaplasia or with an ingrowth or implantation of squamous epithelium from the neighborhood and what is the relation to malignancy is a complicated one and cannot be considered here. In this series 29 per cent of the polypi presented these changes, while 13 per cent were covered by stratified squamous and 58 per cent by cylindrical epithelium.

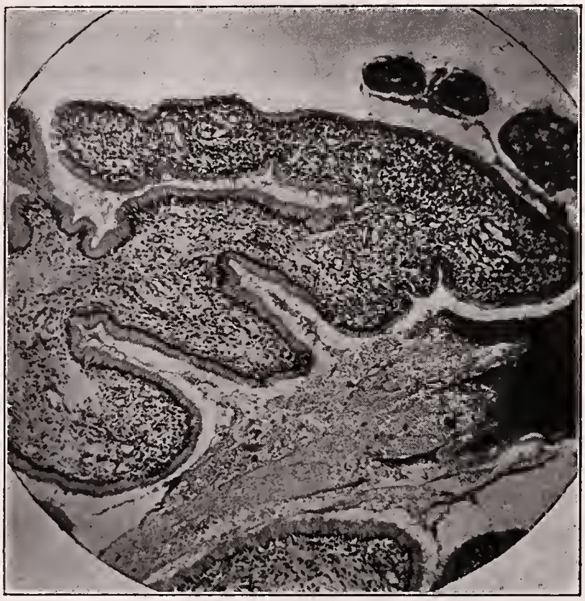

Fig. 5. Papillary outgrowth due to hyperplasia of glandular epithelium in a cervical mucous polyp.

5. Malignancy. From a total of 120 specimens examined, only one polyp showed that it was definitely carcinomatous. In this case the microscopic picture showed a very immature type of cancer cell which so completely overran the whole specimen that one could not make out the features of a simple mucous polyp and led to the question as to which was the primary lesion, cancer of the cervix or the polyp. The occurrence of malignant degeneration of cervical polypi is constantly mentioned in textbooks and several cases are reported in the

literature, for example, Wilson,[5] Keitler,[6] Geller,[7] and Bishop.[8] The question is an important one and is indissolubly associated with the unusual epithelial changes mentioned in the preceding paragraph, as some of these atypical overgrowths at the surface and in the glands may closely simulate malignancy. At any rate, this study leads one to agree with Meyer[9] that carcinomatous degeneration of a mucous polyp should be regarded as of comparatively rare occurrence.

There are also many instances of sarcomatous polypi of the cervix reported. Here it is likely that we have to deal with a polypous form of the disease rather than with a secondary change in a preexisting mucous polyp. However, Kuncz and Sacher[10] describe a case where uterine polypi of a fibrous nature were removed, and one and a half years later the patient returned with an extensive sarcoma polyposum.

6. Decidual reaction. It is maintained that decidua may form in the cervix during pregnancy (Franqué,[11] Waldstein,[12] Volk,[13] Blumberg[14]) and it has also been reported as present in mucous polypi (Stolper,[15] Bondi,[16] Frankl[17]). In this regard the "deciduoma" of older authors (Maier,[18] Küstner,[19] Klotz[20]), which may occur following a pregnancy and arises from nests of decidual tissue, must be kept in mind, as well as the possibility of an endometrial polyp protruding at the external os. None of the specimens obtained from seven pregnant patients showed any change suggesting decidual transformation.

The differential diagnosis of mucous polypi is of some importance, as they must be clearly distinguished from certain other conditions which may assume a polypoid form, for example, fibromyoma, fibroma (Pronai[21]), papilloma (Meyer,[22] Möhnle[23]), condyloma (Wharton[24]), hemangioma. It must also be remembered that, following operations on the cervix or vagina, small polypoid outgrowths of granulation tissue may occur. However, the two lesions which may give most difficulty are, first, the previously-mentioned papillary outgrowths resulting from glandular hyperplasia; and, second, follicular hypertrophy of the cervix. In the latter there is a hypertrophy of all the tissue elements of the cervix, including muscle, and although it usually involves the whole cervix or one lip, it may be limited and resemble a large mucous polyp (Hofmeier,[25] Hilliger,[26] Peters[27]).

AGE INCIDENCE

The cases under consideration were grouped according to their occurrence in the various decades. The figures given by Schröder[28] are quoted for comparison (Table I).

TABLE I.

	Stanford Clinic		Schröder	
	No.	%	No.	%
Under 20 years	1	1	1	1.4
20-30	9	9	2	2.9
30-40	25	25	14	20.0
40-50	33	33	32	45.7
50-60	26	26	18	25.7
60-70	4	4	2	2.8
70-80	2	2	1	1.4
Total Cases	100		70	

It is seen that the incidence of mucous polypi of the cervix is not limited to any age period, but the greatest number was found in the fifth decade, while 35 per cent of the patients were under forty. Gravidarity seemed to have a definite influence, as 82 per cent had had previous pregnancies and only 18 per cent were nulligravidæ.

SYMPTOMATOLOGY

It has been difficult to determine the exact part played by mucous polypi of the cervix in producing symptoms because nearly all the patients had some accompanying lesion to be taken into consideration. The cardinal symptoms which may be attributed to polypi are taken to be menorrhagia, metrorrhagia and leucorrhea. Of the eight patients in whom no abnormality could be found associated with a polyp, only four had any complaints. Three of these gave a history of metrorrhagia and one of leukorrhea. Of the ninety-two patients with other lesions, sixty had no symptoms which could be considered as due to a polyp. The remaining thirty-two were then divided into two groups. In the first were placed fourteen patients who had symptoms (menorrhagia 2, metrorrhagia 11, both 1) that probably were caused by the polypi themselves. In the second group, numbering eighteen, symptoms were present (menorrhagia 4, metrorrhagia 4, both 2, leukorrhea 8) but it could not be determined if these were produced solely by the polypi or by the accompanying lesions.

To summarize, 64 per cent of the patients had no complaints attributable to mucous polypi; in 18 per cent polypi were the cause of abnormal bleeding or leukorrhea; and 18 per cent had one or more of these symptoms which *possibly* were due to the presence of a cervical polyp.

One patient illustrated very well the fact that a cervical polyp may exist for years without giving any trouble. In the course of a pelvic examination, a polyp of the cervix was noted and for some reason was not removed. She returned four years later when it was again seen apparently unchanged. It was then excised and microscopic sections showed a simple mucous polyp, covered with hypertrophied squamous epithelium.

ETIOLOGY AND ASSOCIATION WITH OTHER LESIONS

Few explanations have been offered for the formation of cervical mucous polypi, although it is maintained by many that they originate on the basis of an inflammatory process. Klob,[29] in his textbook published in 1864, explained the mechanism of production as follows: First, one or more glands become distended with secretion, then "one of these small cysts becomes more prominent, forming a round protuberance, which grows out further and further so as to produce an excrescence," which eventually assumes a pedicle and becomes a polypoid tumor. This conception is also maintained by Winckel[30] and Hofmeier.[25] Although it may be the actual means of production in some instances, this suggestion cannot explain every case, as cystic glands are found in only a comparatively small number of specimens (19 per cent in this series).

Tixier and Michon[31] assert that from an anatomopathologic standpoint an infection of the cervix always precedes the occurrence of a polyp but they fail to explain how this result is brought about. Pronai[21] sees the etiologic factor in the marked growth activity of the cervical glands and feels that when an erosion occurs the epithelium of the underlying glands may proliferate in such a manner as to form a polypus. This explanation is logical, yet the growth resulting from such a proliferation does not correspond to a simple mucous polyp but to an adenomatous tumor with papillary excrescences. Moukayé[1] has made an exhaustive study of the subject and believes that these adenomata are produced by a hyperplasia of glandular epithelium which has been stimulated to growth as the result of a previous infection.

It is worthy of note that only 38 per cent of the patients in this series showed gross evidence of infection of the cervix and in only 6 per cent was this the sole accompanying lesion. As stated previously, a large number (65 per cent) of the polypi themselves showed round-cell infiltration and signs of inflammation. This, however, cannot be taken as of very great significance in the question of an etiologic factor, when one remembers how readily these small growths may become secondarily infected. On the whole, it is doubtful if inflammation plays an important role, if at all, in the formation of cervical mucous polypi. Geist[32] concurs in this, while Frankl[17] makes a positive statement to the effect that, whatever may be the cause of cervical mucous polypi, it is *not* infection and when an inflammatory process is noted in a polyp it is to be considered as of a secondary nature.

At the present time it is felt that an endocrine disturbance is concerned in the etiology of hyperplasia of the endometrium, and this explanation may be advanced to account for the formation of polypi in the body of the uterus. It is questionable, however, if it may also apply to those originating from the cervix. In this series only one patient presented an endometrial polyp (arising in a hyperplastic endometrium) associated with a similar cervical growth. If the two conditions had a common causal factor, it is only reasonable to expect that in 100 cases they would be found coexisting in more than one instance.

In attempting to find some factor which might account for the formation of mucous polypi of the cervix, the clinical histories of 100 cases were carefully analyzed and the findings of the pelvic examinations noted. Table II shows the results obtained, and it will at once be seen that in only 8 per cent of the patients there was no evident accompanying condition. This at once leads us to think that polypi are purely secondary lesions and not idiopathic growths, a conception which has already been formulated by Tixier and Michon[31, 33] who claim that cervical polypi are symptomatic of metritis, cancer of the uterus and fibromyomata.

TABLE II

		With Cervicitis
Uterine Displacement:		
Retroversion and cystocele and rectocele	12	4
Uncomplicated retroversion	19	6
Retroversion and small fibromyomata	4	0
Retroversion and cancer of fundus	2	0
Prolapsus uteri	5	2
Previous interposition operation	1	0
Relaxation pelvic floor, cystocele, rectocele	20	12
Pregnancy	7	2
Chronic pelvic inflammatory disease	6	4
Chronic pelvic inflammatory and fibromyomata	1	0
Fibromyomata	4	0
Fibromyomata and cancer fundus	1	1
Large pelvic tumor (undifferentiated)	2	1
Adenomyoma uteri	1	0
Glandular hyperplasia (with uterine polyp)	1	0
Chronic cervicitis (sole lesion)	6	6
No accompanying lesion noted	8	0
Total	100	38

A careful analysis of the table shows that mucous polypi cannot be taken as indicative of any one particular condition. It is noteworthy, though, that

43 per cent of the patients suffered from some displacement of the uterus and 20 per cent had more or less extensive birth injuries. It is well known that uterine malpositions may lead to extensive vascular disturbances in the pelvis, as shown by Emge in his work on varicose veins of the broad ligaments,[34] and the same result may apply to extensive birth trauma which leads to marked relaxation of the pelvic floor. In addition it is found that 7 per cent of the polypi occurred in pregnant women and 11 per cent in patients with inflammatory disease or fibromyomata, all of which result in changes in the blood supply of the uterus. Thus, in ninety-two patients where lesions were found accompanying cervical polypi, these lesions in eighty-one instances were such as to lead to prolonged pelvic congestion.

In his paper Emge refers to the pathologic changes that may result from chronic passive congestion and states that "there is a general tendency toward hypertrophy of the mucous membranes of the entire genital tract." Chisholm,[35] discussing polypoid conditions of the cervix, notes a hypertrophy of the anterior lip following a partial amputation and suggests that this was directly caused by congestion and edema due to new circulatory conditions.

It thus seems justifiable, in view of the evidence adduced both from pathologic examination and clinical findings, to suggest that simple mucous polypi of the cervix are the result of a polypoid hyperplasia of the cervical mucosa, consequent to any condition which leads to a chronic passive congestion of the lower portion of the uterus.

SUMMARY

Microscopically cervical mucous polypi correspond to hyperplastic cervical mucosa with marked increase in vascularity. They may be considerably modified by various secondary changes. The differential diagnosis from other polypoid tumors is discussed. Their occurrence is not limited to any age period, but the majority occur in women over forty. The symptoms commonly produced are menorrhagia, metrorrhagia and leukorrhea; but in 64 per cent of patients there were no ill effects. Ninety-two per cent were accompanied by some other pelvic lesion and eighty-one of these were associated with circulatory changes in the uterus. It is doubtful if inflammation plays a direct part in the formation of mucous polypi of the cervix. It is suggested that they result from any condition which leads to a passive congestion of the lower portion of the uterus.

Stanford Hospital.

BIBLIOGRAPHY

1. Moukayé, K.: Recherches sur les Néoplasies des Glandes Cervicales, Gynéc. et. Obstét., 5:39 (Jan.), 1922.

2. Küstner, O.: Notiz zur Metamorphose des Uterusepithels, Centralbl. f. Gynäk., 8:321, (May 24), 1884.

3. Kaufman, E.: Ueber metaplastische Vorgänge am Epithel des Uterus, besonders den Polypen, Cor.-Bl. f. Schweiz, Aerzte, 36:227, (April 1), 1906.

4. Oeri, R.: Ueber Epithelmetaplasie am Uterus, besonders an Polypen, Ztschr. f. Geburtsh. u. Gynäk., 57:384, 1906.

5. Wilson, T.: Eden and Lockyer's New System of Gynecology, Vol. I, London, McMillan & Co., Ltd., p. 456, 1917.

6. Keitler, H.: Zur klinischen Dignität der Cervicalpolypen, Beitr. z. Geburtsh. u. Gynäk., 3:309, 1900.

7. Geller, F. C.: Ueber atypische Epithelwucherungen am Gebärmutterhalse, Zentralbl. f. Gynäk., 47:406, (March 10), 1923.

8. Bishop, E.: Malignancy in a Cervical Polyp, Am. J. Obst. & Gyn., 12:284, (Aug.), 1926.

9. Meyer, R.: Ueber Epidermoidalisierung an der portio vaginalis uteri, Zentralbl.. f Gynäk., 47:946, (June 16), 1923.

10. Kuncz, A. and Sacher, P.: Sarcoma polyposum Uteri, Arch. f. Gynäk., 123:211, 1924-25.

11. Franqué, O.: Zervix und unteres Uterinsegment, Stuttgart, Encke, 1897. Quoted by Bondi (16).

12. Waldstein, E.: Demonstration. Gesellschaft f. Geburtsh. u. Gynäk. in Wien, Centralbl. f. Gynäk., 24:675 (June 30), 1900.

13. Volk, R.: Das Vorkommen von decidua in der Cervix, Arch f. Gynäk., 69:681, No. 3, 1903.

14. Blumberg, M.: Ueber Deciduazellen in der Cervix Uteri, Arch. f. Gynäk., 75:203, No. 2, 1905.

15. Stolper, L.: Ein Beitrag zur Frage der decidualen Umwandlung von Polypen während der Gravidität, Monatschr, f. Geburtsh, u. Gynäk., 15:663, 1902.

16. Bondi, J.: Ueber deziduale Umwandlung des zervikalen Bindegewebes, Gynäk. Rundschau, 2:18, No. 1, 1908.

17. Frankl, O.: Liepmann's Handbuch der Frauenheilkunde, Vol. 2, Leipzig, F. C. W. Vogel, 1914.

18. Maier, R.: Ueber Geschwulstbildungen mit dem Bau des Deciduagewebes, Virchow's Arch. f. path. Anat., 67:55 (May 26), 1876.

19. Küstner, O.: Deciduaretention. Deciduom. Adenoma Uteri, Arch f. Gynäk., 18:252, No. 2, 1881.

20. Klotz, H.: Zur Frage der "Deciduome," Arch. f. Gynäk., 29:78, No. 1, 1887.

21. Pronai, K.: Ueber Polypen der Portio Vaginalis, Monatschr. f. Geburtsh. u. Gynäk., 29:417, 1909.

22. Meyer, R.: Zur Kenntnis des Papilloma portionis uteri, Arch f. Gynäk., 115:167 (Oct.), 1921.

23. Möhnle, W.: Papillom der Portio, Arch. f. Gynäk., 119:373 (Sept.), 1923.

24. Wharton, L. R.: Rare Tumors of the Cervix of the Uterus of Inflammatory Origin, S. G. and O., 33:145 (Aug.), 1921.

25. Hofmeier, M.: Handbuch der Frauenkrankheiten, Leipzig, F. C. W. Vogel, p. 225, 1921.

26. Hilliger, G.: Ueber Polypen an der Aussenfläche der Portio Vaginalis uteri, Inaug.-Diss., Berlin, 1915.

27. Peters: Ein seltener polypöser Anhang der Vaginalportion, Monatschr. f. Geburtsh. u. Gynäk., 32:573, 1910.

28. Schröder, R.: Lehrbuch der Gynäkologie, Leipzig, F. C. W. Vogel, p. 535, 1922.

29. Klob, J. M.: Path. anat. d. weiblich. Sexual organe, Wien, W. Braumüller, p. 143, 1864.

30. Winckel, F.: Lehrbuch der Frauenkrankheiten, 2nd Ed., Leipzig, S. Hirzel, p. 435, 1890.

31. Tixier, L. and Michon, L.: Valeur Séméiologique des Polypes muqueux de l'Utérus, Gynéc. et. Obstét., 9:253 (March), 1924.

32. Geist, S. H.: Uterine Polyps—Histology, Symptomatology, and a Suggestion as to Etiology, Am. J. Obst. & Gyn., 4:30 (July), 1922.

33. Michon, L.: Les Polypes Muqueux de l'Utérus. Leur Valeur Séméiologique, Lyon méd., 132:583 (July 10), 1923.

34. Emge, L. A.: Varicose Veins of the Female Pelvis, S. G. and O., 32:133 (Feb.), 1921.

35. Chisholm, A. E.: Uterine Cervical Polypi, Practitioner, 110:320 (April), 1923.

SAMSON TUMOR OF THE LOWER SIGMOID

CAUSING DYSMENORRHEA

REPORT OF A CASE

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Mrs. W. C., aged 27, consulted me on June 29, 1926. She had been married about one year. There were no children. Her periods were somewhat irregular, very painful and scant. Previous examination showed the uterus to be retroposed. Periods were established at age of 12. Additional history obtained showed she had a good deal of pain at each period, which radiated to her back. During a great many periods she had slight discharge of blood from the rectum. The pain came at the time of the period, was situated in her back and radiated down each thigh. It was quite severe. There was also suprapubic abdominal pain which was cramp-like in character. It was quite painful for a day or two. After her periods there was mucous discharge, sometimes blood-stained.

This was supposed to be an ordinary case of dysmenorrhea with backward displacement, and currettement and suspension were advised. There was a slight mass felt posterior to the uterus which I took to be a fibroid. At the time of the operation there was no particular narrowing of the internal nor of external os, and practically nothing was obtained from the currettment.

On opening the abdomen, what had been felt and considered to be a uterine fibroid was not attached to the uterus. However, there was a small uterine fibroid upon the uterus about the size of the mass I had previously felt and the uterus itself was large and boggy and not so much retroflexed as had been anticipated. About one or one and one-half inches above the junction of the sigmoid with the rectum and above the peritoneal diaphragm was found a mass one and one-half to two inches long, which was hard and firm and fastened to the left anterior surface of the sigmoid, giving it the appearance of having been contracted. The fibroid was removed from the uterus and a modified Gilliam suspension done. No further operative procedure was done at that time, since I did not have permission for such an operation.

A diagnosis of carcinoma was made from the gross appearance of the sigmoid. A Wassermann test proved negative. The patient's consent to remove this mass was obtained. About ten days after the primary operation this was done and an anastomosis made by fastening a tube into the sigmoid and drawing it down into the rectum, so that a part of the sigmoid was invaginated into the rectum. This was attended with a great deal of difficulty on account of the shortness of the distal end of the bowel.

When the growth was removed the mass still had the gross appearance of carcinoma. There were two patches of discoloration that could be seen upon the mucous membrane surface of the bowel. When the growth was cut, these dark spots were still to be seen. Also, on gross examination irregular little light colored muscular masses were found which seemed to be a part of the muscular wall of the hypertrophied bowel. The specimen was shown at that time to Dr. Mosiman who likewise made diagnosis of carcinoma of the sigmoid.

I am giving in detail the laboratory report of this case made by Dr. W. S. Griswold, of the Seattle General Hospital.

"Cross section shows the mucosa on one side to be thick. There are areas made up of new tissue, which has the appearance of nodules, or glandular tissue. Gross diagnosis, carcinoma.

"Section shows a piece of tissue, covered with perfectly normal intestinal mucosa, including a lymph follicle. The walls of the muscularis are completely destroyed, especially near the periphery. There seems to be an excess of muscle tissue, suggesting uterine musculature. Scattered throughout are several small gland spaces which are fairly regular in shape and size, and are lined with tall columnar epithelium, like that of normal uterine mucosa. There are stroma cells about the gland structures, like uterine mucosa. In many of the gland structures are many red blood cells, probably small old bits of menstrual blood. Diagnosis: Samson's tumor, (uterine endometrial transplant.)"

It appears, then, that we have a displacement both of the muscular uterine tissue and likewise of the mucosa which no doubt, like the uterus, had grown larger at the time of puberty. The darkened areas were shown to be remnants of blood discharged from the mucosa at the period and retained in the growth since there was no outlet.

A theory that is tenable in regard to this case would be that the patient had this displacement of the uterine tissue, both muscularis and mucosa during fetal life. Each time she had a period there was a certain degree of hemorrhage into this tumor, associated with congestion and hemorrhage from the mucous membrane of the sigmoid. The severe pain which radiated to her back and also at times extended down into the bowel, was caused by the menstrual flow, coincident with ordinary flow, into the stroma mass. It produced increase in size and some congestion in the body of the tumor at the time of the menstrual period. The hemorrhage in the mucosa of the sigmoid was similar to that in the so-called vicarious menstruation in cases where the uterus itself has been removed.

SPONDYLITIS DEFORMANS

WITH SPECIAL REFERENCE TO TREATMENT

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Spondylitis deformans is a chronic progressive disease of the spine, beginning with painful stiffness and terminating in complete rigidity and a variable degree of deformity. The etiology is the same as in any case of chronic infectious arthritis. The toxic factor in these chronic cases is secondary, while traumatism seems to be a definite cause. Gonorrhea is said to be antecedent in a large proportion of the males.

There are three types of spondylitis deformans: (1) a manifestation of general arthritis, (2) chronic hypertrophic arthritis of the spine accompanied by arthritis of the shoulders and hips, sometimes known as rhyzomelic spondylosis. and originally known as the Strümpell-Marie type, and (3) a primary infection of the spine alone without marked involvement of the other joints. It has been said that chronic hypertrophic arthritis is quite common among horses and other beasts of burden, especially if the animal has been overworked.[1] The joints of the back lose their springiness and there are few old horses without ankylosis of some of the bones of the back and loins. It is the third type that is said to be most often induced by gonorrhea, by the other forms of infection or by trauma. In at least 80 per cent of these cases the patient is a male between the ages of twenty and forty.[3]

SYMPTOMS

The patient usually complains of a lame back, especially on arising in the morning. It may be stiff for some time before movement causes relaxation. As the disease progresses the pain becomes gradually more and more aggravated by bending, moving or riding. The patient moves with considerable caution, getting up slowly from his chair by holding onto the arms and walking with great care.[7] He is often more comfortable sitting up. He does not seem to get entirely over this stiffness, and eventually the pain becomes constant, usually in the lumbar spine. The pains may be referred almost anywhere, sciatica being one of the commoner complaints. As a rule, the disease progresses to the dorsal spine and finally, although not always, to the cervical spine. As a portion of the spine becomes ankylosed, the pain decreases in that part. The disease need not progress in this order for there are not a few cases of primary cervical involvement.[4] Any marked degree of this condition causes a lowering of the patient's general health and resistance, loss of weight, some degree of secondary anemia, and cold, clammy hands. When the cervical spine is involved, movements of the head and neck become painful and the head may drop forward on the sternum (fig. 1).

DIAGNOSIS

The diagnosis of spondylitis deformans should not be difficult; however, one must always bear in mind the possibility of tuberculosis, malignant disease, an old fracture or sciatica neuritis.

There will not always be positive roentgen-ray findings, but this need not exclude spondylitis, for in many cases the disease has not progressed far enough to show bony changes by the roentgen ray.[5] Then, too, there is the type in which bony hypertrophy is absent.[2]

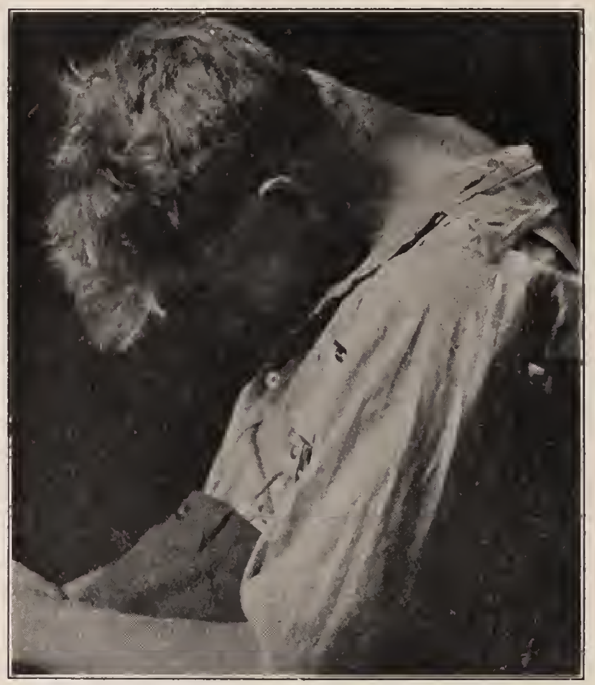

Fig. 1. Marked deformity resulting from spondylitis deformans of cervical spine.

When the roentgen-ray findings are positive, they show loss of the intervertebral disc and there is parrot-beak lipping of the edges of the vertebræ.[6] This is almost pathognomonic of spondylitis. In many cases there is a solid deposit of bone between the vertebræ, giving them the appearance of being soldered together. It is always well to have a lateral as well as an anteroposterior view of the spine so that fracture or destruction of a vertebral body may be excluded.

In the absence of positive roentgen-ray findings, one must rely pretty much on the history and on a thorough physical examination. Usually the stature is highly suggestive and there is almost always a decrease in the chest expansion but not invariably; I have seen patients with fairly advanced spondylitis stand straight and show normal chest expansion.

TREATMENT

The accepted form of treatment has not been materially changed for many years. As a rule the patient is given instruction about exercises and the application of heat, and then equipped with some type of a back brace. If there is a focus of infection, its removal is advised in the hope that thus the exciting cause will be removed. In a good many cases this form of treatment gives surprisingly good results, but there still remains a group that apparently resists every attempt at improvement. In this type total kyphosis of the spine has usually developed and the patient when first seen is bent over and partially incapacitated. This is the type most often seen at the Mayo Clinic, and its treatment has indeed been discouraging.

Diathermy and electrotherapy. For the last year we have been carrying out a slightly different form of treatment. The patient is treated for about a week with diathermy. Intensive through-and-through treatment is required and it is important to cross-fire whenever possible. Bone offers more resistance to the passage of the high-frequency current and is very slow to heat, but it retains the heat for hours, slowly giving it up to the surrounding tissues. The minimal period of treatment is thirty minutes, but it is extended to forty-five minutes whenever possible. The size of the electrodes and the method of applying them will vary with the part of the spine involved. The length of each treatment and the position in which the patient is placed are important details. Pain is usually markedly relieved within the first three or four treatments. After this, stimulation and exercise of the muscles of the spine are begun by means of an evenly surging sinusoidal current. Very small active electrodes permit the different muscles to be picked out and exercised separately. The number of contractions should seldom be more than ten a minute. The time of application is gradually increased not to exceed five minutes, but it is desirable to keep the daily average around three minutes. When polarity as well as exercise is desired the pulsating direct galvanic current may be substituted for the sinusoidal.

Exercise. In conjunction with the foregoing treatment, certain forms of exercise, massage and stretching are carried on, besides the various forms of occupational therapy. Massage of the neck, and hips with especial attention to that part of the spine involved is undertaken first. Active exercises are then carried out, consisting of: (1) lateral bending of the trunk; (2) twisting or rotating the trunk with the pelvis fixed, best carried out by placing the right foot forward and twisting to the right, then the left foot forward and twisting to the left; (3) extension of the hip against resistance; (4) breathing exercises with special emphasis on elevation of the chest, and (5) raising the trunk from the prone position with the hands behind the back.

Stretching. Stretching is carried out in various ways: (1) pectoral stretching, in which the patient places his hands at the back of his neck and the operator pulls his elbows backwards while making pressure against the dorsal curve; (2) stretching of the neck by means of a head suspension, and (3) stretching on the table. The patient is strapped to the table, one strap above the knees, one just below the hips, one just above the hips, one over the chest and one over each shoulder (fig. 2). The table is so constructed as to be adjustable to the curve in the spine. The weight of the patient forces the table lower, and tends to correct the spinal curve gradually. Additional weights may be added as required. The actual beginning of stretching is indicated when the patient feels a very decided pull on stiffened muscles and joints. After ten or fifteen minutes it is usually possible to lower the table another notch or increase the weights for an additional twenty minutes. The same table may be used to straighten out the flexion deformity of the knees which is often seen in cases of spondylitis.*

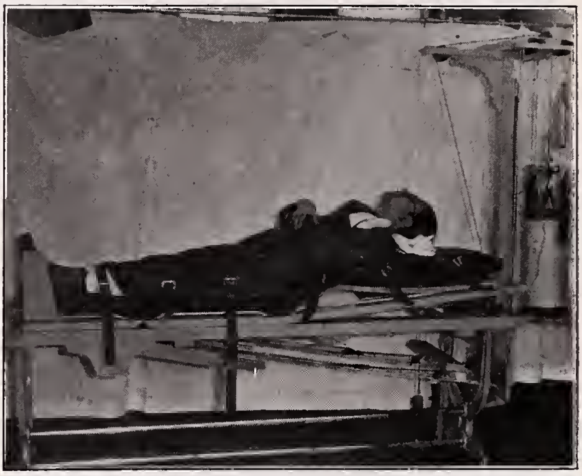

Fig. 2. Special table for stretching the spine, **hips** or knees.

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*I am indebted to Mr. Harry Evans, chief carpenter of the Mayo Clinic, for designing and constructing this table.

This treatment has proved very beneficial, but we have not been content to allow the patient to rest the remainder of the day. He is instructed in some form of occupational therapy, the choice of which is limited to two or three crafts. If he is able to stand and work, an upright rug loom has proved the most satisfactory (fig. 3). He stands facing the loom which is elevated to bring the work on a level with his shoulders or higher. Two long strips of cloth, or other rug material, are braided around the warp threads and pulled through each time with a long backward and downward swing of the arm. Weaving across the rug swings the right arm, and weaving back across to the left swings the left. This accomplishes pectoral stretching. As the patient weaves he is gradually forced to reach higher and higher, getting in consequence each time a longer swing backwards. It is desirable to have him stand very close to the loom, since this forces him to hold his neck and shoulders back as far as possible in order to work at all conveniently. If he is not able to stand easily, cord-knotting can be substituted. The article to be made should be one which requires very long pieces of cord, such as a knotted belt or dog leash, and should be fastened up in front of the patient as high as the level of his eyes, if possible, so that he must reach up to work. Knotting with the long cords requires the same pull of the arms backwards and downwards, both arms pulling back at the same time to tie the knot. Lacing leather billfolds or bags with a long leather thong will give similar motion.

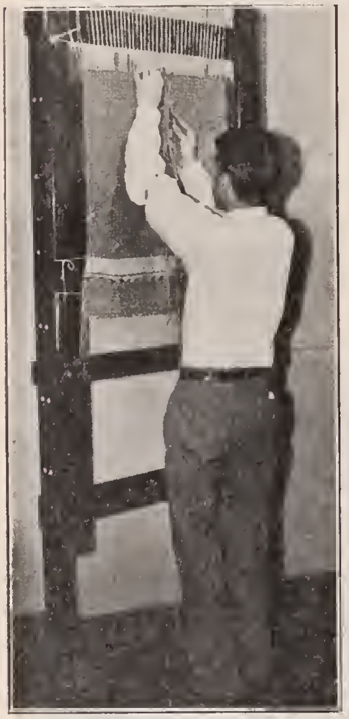

Fig. 3. Upright rug loom useful for pectoral stretching.

The craft, of course, is only a means to an end, but if it interests the patient, he will be kept at it, even though it hurts, by the fascination of seeing the article grow. In this way, by fairly continuous exercise, he is tided over the time between his other more strenuous treatments, so that he is able each time to retain more of the benefit gained.

In this series thirty-seven chronic cases were studied; of these 24 per cent were females and 76 per cent males. The average age was forty-two and eight-tenths years; 26 per cent were less than thirty-five, the youngest being nineteen. The average age among the females was forty-six and among the males, forty-one. This would indicate that the condition comes at the age when the beginning of the senescent arthritic changes may be expected. There is also an infectious factor, seen most often in the male. As a rule, when the physician sees the patient with spondylitis, the disease has progressed beyond the point where distinct benefit can be expected to follow the removal of foci of infection. He must depend very largely on symptomatic and mechanical treatment. This is perhaps the reason why prognosis must be limited to improvement and not cure.

RESULTS

The result has been graded as follows: (1) no improvement; (2) relief from pain with only slight improvement in the deformity, and (3) distinct improvement in deformity as measured by a lead tape, the roentgen-ray change in height and photographs, together with relief from pain. Out of this group of thirty-seven the results in 45 per cent came under the third classification. At the time of their dismissal these patients had all gained in stature, were free of pain and felt better generally. During their treatment, all patients had been under the care of medical sections of the Mayo Clinic and had been getting instruction as to the nature of their disease, the proper diet and climate, and the importance of eradication of foci of infection. In 16 per cent of the cases pain was relieved but the deformity was only slightly improved. In 39 per cent there was no improvement.

One case presented here was that of a man, aged fifty-nine, who complained of distinct kyphosis, pain and stiffness in the lumbodorsal and cervical regions of the spine. The degree of improvement was considerable, considering the age and deformity of the patient (figs. 4, 5 and 6).

In another case a man, aged twenty-nine, complained of debility and deformity, involvement of the dorsolumbar and cervical regions of the spine. The improvement is shown in figures 7 and 8.

Before the patient is dismissed he is instructed in writing how to apply heat and massage after returning home. A simple baking-machine can be supplied by a tinsmith for about fifteen dollars; with this the treatment can be continued, for, as in all types of chronic arthritis, unless treatment is carried on continuously and persistently, the good

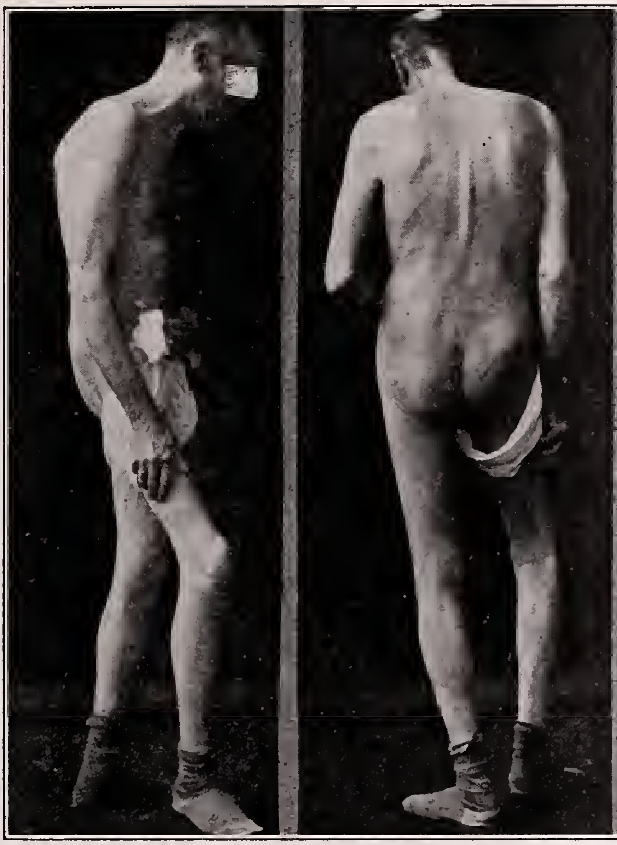

Fig. 4a. Fig. 4b.

Fig. 4. Marked cervicodorsal kyphosis and flexion deformity of right hip. (Photograph taken on admission of patient to hospital.)

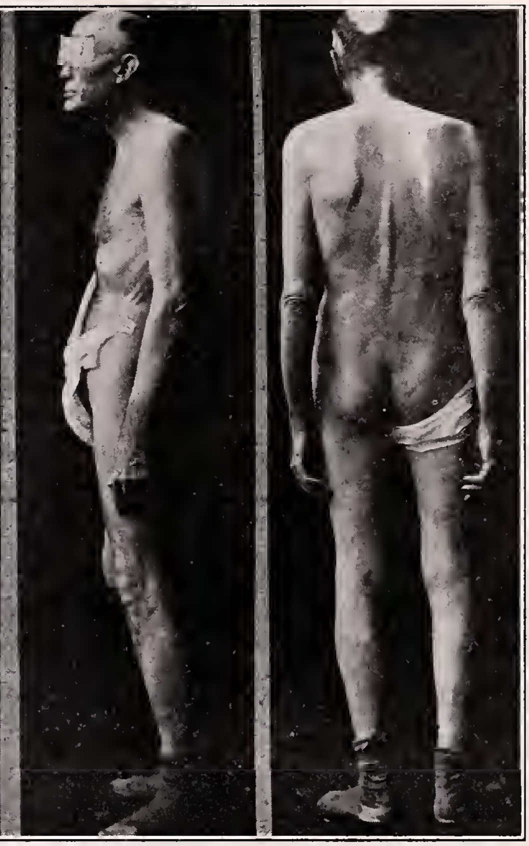

Fig. 5a. Fig. 5b.

Fig. 5. Improvement in stature and hip flexion after treatment.

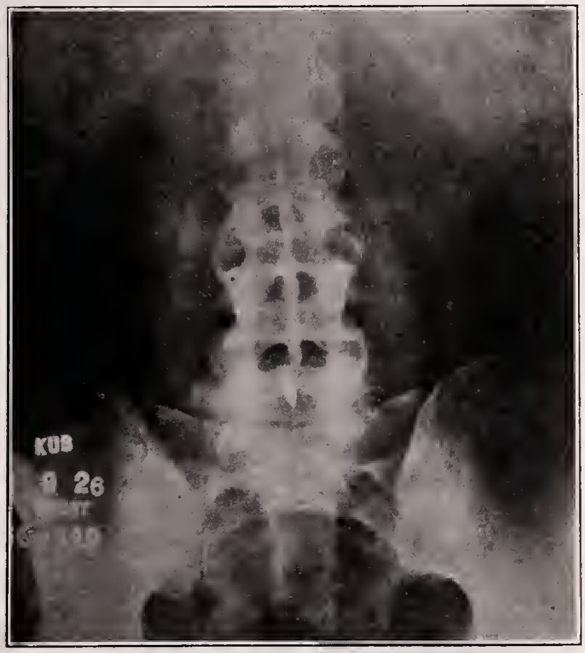

Fig. 6. (Same case as figures 4 and 5.) Soldered appearance of spine.

results cannot be expected to endure. These patients are also instructed to continue their exercises and occupational therapy.

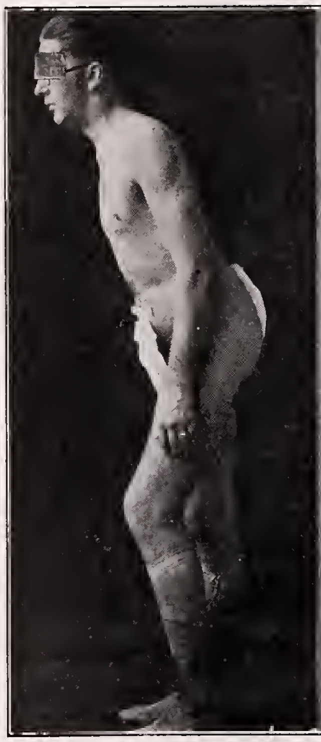

Fig. 7.

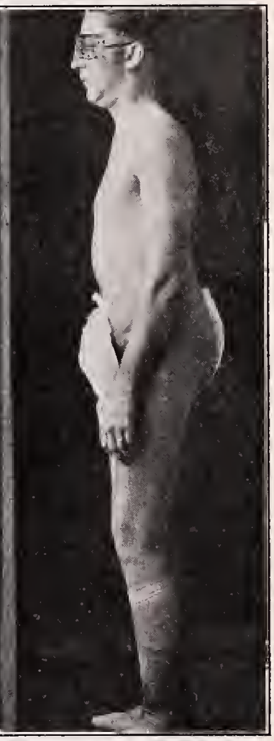

Fig. 8.

Fig. 7. Deformity before treatment.

Fig. 8. After six months' treatment.

Although these results are not spectacular, they indicate that spondylitis deformans is not entirely hopeless and that by persistent treatment increasingly better results can be accomplished.

BIBLIOGRAPHY

1. Commandeur: Spondylite rhumatismale et grossesse. Bull. Soc. d' Obstét. et Gynec., 1921, x, 634-637.

2. Dalla Vedova: Sul traatamento della spondilite. Arch. di Ortop., 1921, xxxvii, 214-269.

3. Fraenkel, Eugen: Uber spondylitis acuta infectiosa und Rückenmarkserkrankungen. Fortschr. a. d. Geb. d. Röntgenstrahlen, 1923, xxx, 103-111.

4. Gouldesbrough, Calude: The X-Ray Appearance of so-called Osteoarthritis of the Spine. Lancet, 1921, i, 1074-1075.

5. Knaggs, R. L.: Spondylitis Deformans. Brit. Jour. Surg., 1924-25, xii, 524-546.

6. Pfender, C. A.: Roentgen Treatment of Chronic Spondylitis Deformans (Chronic Sacroiliac Lumbalgia or Chronic Vertebral Rheumatism). Am. Jour. Roentgenol., 1925, xiii, 551-558.

7. Whitman, Royal: A Treatise on Orthopaedic Surgery. Philadelphia, Lea and Febiger, 1923, 7 ed., 116-123.

COMMONLY CONFUSED DISABILITIES OF THE HIP JOINT IN CHILDREN*

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There is perhaps no more perplexing and unsatisfactory problem in orthopedic surgery than tuberculosis of the hip joint in children. Despite all the literature upon the subject and the more or less standardized methods of treatment, the results are discouraging to patient and surgeon alike. It is almost safe to say that the child afflicted with this malady is doomed to a precarious existence and in every instance to permanently impaired function. In all probability those cases of alleged tuberculous hip joint that have recovered under the usual methods of treatment with good function were not tuberculosis of the hip at all, but some other form of hip disability to which children are subject.

In the light of such a situation it is of great importance to patient and parents that we can be sure of our ground before offering a prognosis or entering upon a campaign of treatment. When we are certain that the hip is tuberculous we must frankly admit that the best that can be hoped for is ankylosis of the joint; in fact, that seems to be the only hope of cure and it is so difficult to attain that one never knows whether treatment will extend over two or twenty years.

Experience with a considerable number of hip disabilities during recent years indicates that there is a tendency to make a diagnosis of tuberculosis of the hip in every form of painful hip with restricted motion, and in fact the error is often made when the complaint consists of nothing more than limp or shortening. Fortunately, most pathologic hip joints in children are not tuberculous.

The reason for the common error in diagnosis lies in the fact that much has been written or taught with reference to tuberculous hip joint as if it were prevalent, and little has been said in the usual literature to which the practitioner has reference about common maladies simulating tuberculosis of the hip. This fact affords the incentive for this discussion. It is not purposed to enter into an exhaustive dissertation upon all the hip joint disabilities, nor to deal in detail with treatment, but rather to point out a few of the commoner sources of confusion in diagnosis. As a basis for the study, an analysis was made of the last 1000 cases seen at the Shriners Hospital for crippled children and the orthopedic clinic of the University of Oregon medical school, of which number 94, or nearly 10 per cent were disabilities of the hip in children under 16.

Of the 94 hip cases, 20 were tuberculous, 14 Legg's disease, 6 coxa vara, 28 congenital dislocation, 14 osteomyelitis, or septic arthritis, 6 arthritis from unknown cause. The remaining 6 comprised a variety of less common hip disorders. The numerous cases of general arthritis in which the hips were involved were not counted in the group and no cases of neoplasm or acute trauma were included. It is remarkable that the number of congenital dislocations should exceed the number of tuberculous hips and this would probably not be true in larger clinics in the East.

It would seem, then, that in children suffering from a disorder of the hip we should think of congenital dislocation, tuberculosis, Legg's disease, osteomyelitis, septic arthritis, nonseptic arthritis and coxa vara as the more common probabilities. It is difficult to see how congenital dislocation should be confused. It exists from birth and the first effort at walking reveals the characteristic swaying hip. It is painless as a rule; there is shortening and increased lumbar lordosis because the head is posterior to the center of gravity. The great trochanter is above Nelaton's line which always means either dislocation of the hip or fracture or shortening or bending of the neck of the femur. The x-ray settles the question but the mild congenital subluxation may be confusing.

Tuberculosis is a more difficult problem and in any limp referable to the hip in any child of any age, with restricted movement, it must be kept in mind as a possible cause. The absolute conclusive diagnosis of a tuberculous joint can be made only upon demonstration of the tubercle in the joint structure, a procedure too seldom done, or upon animal inoculations with fluid from a cold abscess. Therefore, the diagnosis often cannot be settled and the safest course is to direct treatment as if tuberculosis were present, viz., general tuberculosis treatment—sunlight, food, rest and immobilization. The tubercle begins in the bone of the femur or acetabulum near the epiphysis and invades the joint by destruction. Before the joint is invaded there is mild limp, pain on unusual strain, stiffness, and often generally impaired health. After general joint involvement the pain is severe and muscle spasm is marked. Adduction deformity begins and the limp is severe in degree.

The radiograph is of little aid early, there being only a general haziness of the joint shadow. Later, when destructive changes have advanced, it reveals general bone atrophy, necrotic bone areas and characteristically no new bone production; in other words, no effort at repair or defense. The family history, the local prevalence of bovine tuberculosis, and the general appearance must be considered in the evidence. Of great importance is the regular afternoon rise of temperature to 99.5° to 101.5°. If there is no afternoon rise of temperature, it speaks strongly against tuberculosis; if the afternoon temperature exceeds 101.5°, it speaks against tuberculosis and in favor of another type of infection. The intradermal tuberculin reaction is important. If it is repeatedly negative, the hip is not tuberculous. If it is positive after the age of six, it is of no value. If it is positive under six, it is only corroborative evidence not to be appraised too seriously. Night cries are significant and are due to the relaxation of protective muscle spasm during sleep, permitting unguarded movements causing the child to awaken startled by pain in the sensitive joint. Atrophy of the muscles about the joint seems to occur earlier and more rapidly in tuberculosis of the joint than in other pathologic process.

In any event the time eventually comes when by the above findings and the prognosis and prolonged nature of the disorder, possibly the development of cold abscess, the conclusion is safe that the hip is tuberculous. However, we must from the first prevent deformity and damage by weight bearing by immobilization in plaster and rest in bed and promote healing by general measures. The ideal treatment would be operative measures to establish ankylosis but they often fail in children.

In this series we referred to twelve cases of Legg's disease. Every one of these had had prolonged and tedious treatment. The process is a definite clinical entity not generally known to the profession and fairly common. It was first discovered by Legg in 1910, later and independently by Perthes and Calve and is known as Legg-Perthes-Calve disease, coxa plana osteochondritis deformans juvenilis. It always occurs between the ages of five and ten and more often in boys. The characteristic history is gradual onset with increasing limp without apparent cause. The child runs and plays as usual and rarely complains of pain. Examination reveals no shortening, very little atrophy, mild spasm, generally limited movement but especially limited rotation and abduction and nothing else. There is no fever, no night cries, etc. The radiograph is indispensable and very decisive. The femoral epiphysis is flattened, mushroomed and often broken. The femoral neck is sometimes increased in diameter. The disease has a tendency to recover spontaneously in two years but deformity may occur and should be prevented by mild abduction in plaster and restricted movement. Eventually the head reforms, becomes smooth, the function is normal, although some remain as chronic arthritic hips from misfit of acetabulum and head. It is occasionally bilateral. Its etiology is unknown.

Of the six cases of coxa vara four had been regarded as tuberculosis because the condition is not generally recognized and because of comparative rarity. By coxa vara we mean a decrease in the normal angle made between the neck and the shaft of the femur from any cause, i.e., bending or breaking. It is often the result of fracture of the neck of the femur in adults but the type we refer to here is known as coxa vara of adolescence or slipping femoral epiphysis. It occurs always between the ages of twelve and sixteen. The early history is similar to that described before. The child begins to limp without apparent cause and the limp becomes gradually greater. At first there is stiffness and aching on use and later when limp is severe the pain becomes more marked but rarely to the degree of night cries and severe muscle spasm. There is no fever. Very often the child is found to be obese and frequently to an astonishing degree. In fact, the disorder is thought by some to be a manifestation of dyspituitarism.

The hip disability is often bilateral. Early in the disease examination reveals limited movement in the hip joint but very particularly limited abduction and the limitation is not due to spasm of the abductor muscles as in tuberculosis, but gives the sensation of a mechanical blocking. When forced it causes pain but the other movements may be carried out passively without difficulty. At the onset the radiograph may be negative, but as the process advances the femoral epiphyseal head is seen to slip off the neck gradually. It deposits bone as it does so, resulting in a curved right angled neck as a final result. The leg thus becomes shortened and externally rotated with the great trochanter above Nelaton's line. Abduction is markedly limited, the gait is very awkward and the disability very great. It seems as if the obliquity of the neck of the femur renders it more vulnerable to displacement by the great strain to which it is subjected, particularly in very heavy children. This is particularly true if the epiphysis is softened by an endocrine or metabolic disorder.

When recognized early the disability can be prevented by extreme abduction in plaster for six months. At later stages, when the epiphysis has slipped off, it may be possible in some cases to replace it by complete abduction and internal rotation, as in Whitman's method for fracture of the neck of the femur, followed by immobilzation for three months. Still later when ossification has occurred in extreme deformity, subtrochanteric osteotomy should be done, if there is not too much limitation of motion in the joint, because abduction is essential to good locomotion.

It is not so very serious comparatively to confuse the foregoing maladies, but it is nothing short of calamity to overlook the diagnosis and defer the treatment of the next group of acute septic processes in and about the hip joint, because to do so frequently results in death or permanent invalidism. Let us make this statement first. When a child is seized with anguished pain in the hip, loss of function of the extremity, excruciating sensitiveness on the slightest movement in any direction, and resents even the touching of the bed, displays febrile manifestations (child fever, leucocytosis), that child has in all probability either septic arthritis of the hip joint or osteomyelitis. The radiograph is of no assistance for it is too early. We must not wait until it shows destruction.

It is essential that we approach the examination with the greatest care and gentleness, and secure the confidence and cooperation of the child. We are looking for definite localized tenderness which about the hip is difficult to determine because of the depth of the structures. There is severe muscle spasm and often the hip is drawn into flexion. Begin by palpating places you know will not hurt and carefully approach the hip. Feel the crest of the ilium gently. Then palpate the great trochanter and press deeply. If they are not tender, look for tenderness about the appendix and the kidney if the right hip seems affected. Appendiceal abscess and perineal abscess have been the cause of five of our seeming hip disabilities.

Next, approach the joint itself. The head of the femur lies very superficially directly beneath the femoral artery, midway between the pubic spine and anterior superior spine of the ilium. If there is great tenderness at this point and particularly if swelling can be detected, aspiration with view to determining the nature of the process should not be deferred. If a purulent content is withdrawn, drainage should immediately be instituted from behind and traction in abduction applied. It may be impossible to detect acute osteomyelitis of the acetabulum very early, but in the femur and the ilium, which are more often affected, localized tenderness is the key to the situation. Early and adequate drainage is essential.

In closing, let me call attention to four axiomatic principles often overlooked and of immeasurable importance: (1) If a joint cannot be moved in any direction whatsoever without severe pain, there is generalized pathology inside that joint. (2) If it cannot be moved in some one or more directions without pain but can be moved in some one or more other directions painlessly, the pathology is not within the joint but outside it nearby. (3) Whenever osteomyelitis occurs in a bone near a joint, there occurs in that joint a synovial effusion containing many leucocytes which looks like pus but on aspiration and culture is found to be sterile. To drain such a joint assures its destruction and neglects the real pathology, the osteomyelitis. The treatment was worse than none. (4) It is always safe to aspirate a joint under aseptic precautions and, if the fluid withdrawn is clear or slightly blood tinged and culture reveals the streptococcus, immobilize with traction and do not drain. If the fluid is frank pus containing straphylococcus, the joint should be drained freely. No matter what the fluid looks like, if it is sterile, do not drain.

Finally, in nearly every form of hip disorder there is a tendency to the development of deformity. Treatment must be directed toward its prevention. No matter what measures are used, traction, plaster of Paris, splints or simple rest in bed, the extremity must be maintained in that position which offers the maximum degree of function even if bony ankylosis occurs, namely, abduction of 5°, external rotation of 5° and flexion of 20°.

ACRODYNIA*

REPORT OF SIX CASES

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In October, 1920, Dr. J. B. Bilderback, a member of your society, reported an unusual condition under the title, "A Group of Cases of Unknown Etiology and Diagnosis." As there was nothing covering this in the medical literature of the United States, he forwarded a report of his cases to Dr. John Lovett Morse, who in turn for want of a diagnosis sent the case reports to Dr. Weston, of Columbia, S. C. The latter took great pains to exclude pellagra, and subsequently reported Bilderback's cases before the section of Diseases of Children, at the New Orleans meeting of American Medical Association in 1920, under the title of acrodynia.

REVIEW OF THE LITERATURE

In 1914 Swift[1] of Adelaide, Australia, reported fourteen cases having the same clinical picture under the term erythroedema. Wood,[2] of Melbourne, in 1921 reported that he had observed similar cases for thirty years, and that his predecessor, Snowball, had long tabulated such cases as "raw beef hands and feet." Littlejohn[3] recognized the same group of symptoms under the term "pink disease." Since then, in an effort to find a suitable term descriptive of the clinical and pathologic findings, various observers have suggested different terminology, e.g., Thursfield,[4] dermatopolyneuritis; Paterson and Greenfield,[5] erythroedema, polyneuritis. Butler,[6] in connection with a careful clinical and biopsy report, suggests that the century old term acrodynia might better be left as descriptive of the French garrison epidemic of 1828, which was probably caused by arsenical poisoning from contaminated wine, and that erythroedema, the terminology used by Swift, be substituted for it. Recently, Warthin has suggested that it should be recognized as Swift's disease. The term acrodynia means literally a painful extremity. It has gained wide usage and, unless the etiology and pathology of the disease are more definitely demonstrated, it will probably remain in the literature.

SYMPTOMATOLOGY

More than one hundred cases have been reported on this continent. Having seen a case, the picture is so striking that one never forgets it. The severity of the symptoms may vary, but they may be briefly summarized with Bilderback's[7] "six p's": pain, pink hands and feet, peeling, prostration, paresthesia and perspiration. If one were good at cross word puzzles and could think of a word beginning with P, consisting of six or eight letters, meaning purulent discharge from nose, another P might be added.

ETIOLOGY

This is at present unknown. It is agreed by all, with the probable exception of Warthin,[8] that it is not pellagra. It is not related to influenza. Brown,[9] after careful clinical and metabolic studies, concluded that acrodynia is not a deficiency disease, but rather the expression of some toxic condition following upper respiratory infections. Vipond[10] isolated from enlarged lymph-nodes a gram-positive organism. This finding has not been confirmed by other observers. Byfield,[11] Rodda[12] and others believe acrodynia is caused by some organism which finds a lodging place somewhere in the upper respiratory tract. This may be in the tonsils, adenoids, sinuses, teeth, mouth or gums. In 1923, before the Canadian Society for the Study of Diseases of Children, Clark[13] of Hamilton reported five cases. In one of these, an infant, he removed a sheep tick from the neck. This was immediately followed by marked signs of improvement.

PATHOLOGY

Byfield[11] reports one autopsy, complicated by tuberculosis, which showed involvement of an occasional anterior horn cell of the spinal cord, gliosis about the central canal and edema of the sensory roots. Paterson and Greenfield[5] report two cases, one of which was complicated by tuberculosis. They conclude that there is evidence of a peripheral neuritis and of chronic, inflammatory changes in the spinal cord and nerve roots, in which the sensory nerve fibers are more affected than the motor.

Warthin[8] reports two cases, and concludes that the essential pathologic changes appear to be extreme edema and slight meningeal irritation of the central nervous system, chronic erythema of the skin with hyperkeratosis, hypertrophy of the epidermis and sweat glands with slight pigmentation of the rete, occurring in children of the hypoplastic lymphatic constitution, associated with or terminating in respiratory infections and gastrointestinal catarrh and inanition.

With reference to my own two cases, Dr. William Boyd reported that, using the ordinary methods of staining, the brain, spinal cord, sympathetic ganglia, peroneal nerves, showed no pathologic changes. Owing to some difficulty with the preparation and staining of the nerves, he was unable to confirm the report of Paterson and Greenfield.[5]

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* Read before the Semiannual Meeting of North Pacific Pediatric Society, Victoria, B. C., June, 1926.

TREATMENT

Until recently one had to be content with dietetic and palliative treatment. Vipond[10] reports the cure of two cases with vaccines prepared from an organism isolated from the lymph nodes. Bilderback,[7] as late as February, 1925, deplores our "therapeutic pauperism." Sweet,[14] in August, 1925, reports five cases in which he employed the mercury quartz lamp for a period of from five to ten minutes at intervals of three days. In combination with this he used the radiant heat of a carbon filament lamp, in order to warm the patient thoroughly before and during treatment. He states the improvement was manifest after the third treatment and exposure to the ultra violet rays was only necessary on an average of eight times, before all the symptoms had entirely disappeared. Rodda,[12] in August, 1925, reports in his series of seventeen cases that early recognition of the disorder and prompt removal of the tonsils and adenoids has been followed by a speedy recovery in all patients. There was speedy relief from perspiration, return of appetite and sleep, gain in weight and, lastly, disappearance of the peculiar skin findings.

CASE REPORTS

Case 1. Albert A., age 18 months. Referred to me by Dr. Lewis of Angusville, Man., Dec. 19, 1924.

Only child. Birth weight 7½ lbs. Nursed ten months. Weight on weaning, 23 lbs. Sat up at nine months. Walked at nineteen and one-half months. Twelve teeth at thirteen months. Subsequent diet, milk one and one-half pints and cereals, milk pudding and bits from table.

In August he developed a rash which was blotchy in character. No fever, no coryza. Diagnosis at this time was measles.

Mother dates the onset of the present illness from September. At this time baby cut his eye and stomach teeth in rapid succession. This was accompanied by marked sweating and coincidently a rash similar in character to that of August appeared. The baby became extremely fretful, and lay with his face burrowed in his pillow. He slept but little, and when awake would either bang his head against his crib or sit pulling the hair out of his head. In about two weeks he became unable to walk. The feet and hands became swollen and pink in color and extremely itchy. A number of blebs formed between toes and fingers, followed by desquamation. In the middle of November, two months after onset, all of his lower teeth fell out, leaving cavities without sloughing. On Dec. 12 the father states that a new tooth erupted but fell out very shortly.

The patient was referred to Children's Hospital. Weight on admission, 23 lbs. 2 ounces. He had all of the classical symptoms of acrodynia with the exception of nasal discharge. Physical examination showed absence of knee jerks and insensibility to pin prick below knee joints. He was barely able to sit up. Urine negative. Blood count: H.b., 90 per cent; w.b.c., 15,100; polys, 64; small lymph 32; Lg. Mon. 2; trans. 1; eos. 1.

Temperature varied between 100°-101°. His anorexia was marked for solids, but he took milk and other fluids well.

Radiogram of skull showed no evidence of bony changes. The molar nuclei appeared normal.

He remained in hospital four days, and was discharged at the parents' request, with the prognosis that he would recover in a period of four to six months.

Six weeks later, Feb. 5, 1925, he was readmitted. The history was that, on his return home, his restlessness, irritability and loss of sleep became more marked. Sweating had increased, and the nasal discharge had now become profuse.

Physical examination: Weight 19 lbs., 12 oz. Weight loss 3 lbs. 6 oz. Now unable to sit up. Temperature 101°. The clinical picture was the same as on first admission but more exaggerated. In addition, there was a furunculosis, confined to the back of the chest and lumbar region, and moist rales scattered throughout chest. Blood count, Feb. 7, r.b.c. 5,860; w.b.c. 15,150; poly. 69; sm. lymph 26; lg. mon. 2; trans. 3.

Feb. 11. Smear from nasal discharge, numerous pus cells. Extra cellular diploccocci predominated. A few short chained streptococci, some staphylococci.

Feb. 12. Von Pirquet negative.

Feb. 19. Blood count: Hgb. 80 per cent; r.b.c. 6,210,000; color index, 6; w.b.c. 24,600; polys. 68 per cent; sm. lymph 30; eos. 2.

Feb. 20. Culture from furuncles contained staphylococcus aureus.

Treatment. Diet suitable for age, with cod liver oil. Clothes removed, cradle and carbon light treatment instituted. Quartz lamp treatment daily.

Progress While in Hospital. Temperature came down to normal on the sixth day and remained constantly so for thirty-three days. During this time there was marked nasal discharge, anorexia, sleeplessness, apathy, periodic desquamation of hands and feet, marked irritation and progressive loss of weight. New furuncles continued to appear.

On the 34th day, temperature rose to 102° with marked dullness, almost flatness at base of right lung, bronchial breathing, and crackling rales. Diagnosis, pneumonia. He was given a transfusion of 220 c.c. of blood by the direct method of Dr. J. D. McEachern, without benefit.

He died on the 37th day, March 14.

Autopsy by Dr. William Boyd, Children's hospital pathologist.

Pathologic Findings. The right pleural cavity is almost completely filled with purulent fluid and the lung is collapsed about its root. There is a large quantity of flaky purulent material in the posterior part of the pleural cavity and adherent to the parietal pleura. The surface of the lung is covered with a thick layer of similar material. The left pleural cavity is normal.

Right lung shows complete collapse, with a fibrinopurulent exudate. On section the lung is completely airless and dry, and feels rather like a piece of leather. Left lung shows no abnormality.

Spleen shows some degree of fatty degeneration.

Mesentery. Numerous lymphatic glands are enlarged, particularly in the ileocecal angle and in the region extending upwards to the left along the line of the superior mesenteric vessels. This agrees with Warthin's findings.

There are numerous large glands along the line of the external iliac arteries and in the groin. This enlargement is probably due to furunculosis of the skin from which the patient suffered during life.

Nervous system. Microscopic examination of the brain, spinal cord and posterior root ganglia, peroneal nerves, stained by ordinary methods, showed no change.

Summary. Duration, onset of illness until death, approximately eight months. From time of diagnosis until death three months. Quartz lamp, cod liver oil, diet had no effect on preventing sepsis and subsequent empyema.

Case 2. Baby J., male, age 18 months. First seen April 21, 1925. Residence, Newton Siding, Man.

Second child, full term. Birth weight 7 lbs. 12 oz. Nursed one year. Then had a mixed diet, consisting of milk 1½ pints daily, oatmeal, vegetables, broths, etc. Walked at one year of age. At thirteen months became extremely irritable. His food had to be forced. At fifteen months, perspiration was profuse, and shortly afterwards the hands and feet became red, raw looking and irritable. Periodically blisters would form, followed by desquamation. He would at times scratch his feet and hands, at other times pull the hair out from the sides of his head and would sleep curled up on himself with his face burrowed in the pillow.

One week previously, due to constipation, the rectum prolapsed, and this had continued with every stool. He is now unable to walk, and creeps with difficulty.

Patient was referred to the Children's Hospital.

Physical examination: Weight 20½ lb.; number of teeth, 10; no evidence of infection in gums or mouth.

Extremities. The hands and feet present the typical appearance of acrodynia with marked desquamation. In addition the nails show evidence of trophic changes.

Nervous system. Knee jerks present. Sensation of hands and feet normal.

Skin. There is a profuse papular rash over buttocks and extending back of both thighs. In the midlumbar region there is a small furuncle.

Laboratory findings: Urine, negative April 23. Blood: r.b.c. 4,460,000; Hgb. 95 per cent; w.b.c. 8,400; polys 55 per cent; sm. lymph 33 per cent; lg. mon. 12 per cent; Von Pirquet, negative. Blood Wassermann, negative.

Temperature remained normal for four days, when it suddenly rose to 103°. The same day a large boil in the lumbar region was incised. Culture contained staphylococcus aureus. Chest examination indicated bronchopneumonia.

May 5. Penis and scrotum became intensely inflamed. The tips of the fingers and thumbs assumed a black color and were apparently becoming gangrenous. The left ankle was hot and swollen, probably due to a septic arthritis. May 7. Blood culture, streptococci in short chains. May 9. Left ankle aspirated. Culture showed no growth. May 11. In the right lumbar region there is an area two inches in diameter, apparently gangrenous. Necrosis slowly increasing in the terminal phalanx of right thumb. May 13. Lumbar puncture, negative. May 15. Terminal phalanx of thumb sloughed off. Radiogram at this time showed no bone necrosis. Blood count taken at various times during the course of illness varied from 18,400 to 26,850, white cells.

Treatment. Diet, cod liver oil. Quartz lamp daily. Otherwise symptomatic.

Patient died May 16. Autopsy by Dr. Boyd May 17.

Pathologic Findings. The body is that of a poorly nourished child with several septic foci visible on the surface. The left ankle is swollen, owing to a cellulitis of the subcutaneous tissue. The distal part of the right thumb is eaten away and almost black in color, so as to give the appearance of gangrene. In right lumbar region there is an area where the skin has sloughed away, leaving an area almost suggesting a shallow bed sore, measuring 2 by 1½ inches. There is an abscess on the inner side of the arm, and a septic gland in the right inguinal region.

Liver, spleen, kidneys and gastrointestinal canal normal.

Brain. No sign of meningitis or other gross lesion can be found. It is regretted that a microscopic examination of the nervous system was not carried out.

Diagnosis. Pink disease with death from septic poisoning.

Summary. Duration from onset until death seven months. From time of diagnosis until death five weeks. Quartz lamp daily, correct diet for age. Otherwise symptomatic treatment.

Case 3. Baby S., male, age one year. Residence, Lyleton, Man. Admitted to Children's Hospital July 21, 1925. Full term, normal labor. Birth weight, 7 lb. 12 oz. Nursed ten months. Did well. Now on mixed diet of milk, arrowroot biscuits, cereal.

About three months ago the mother noticed that the infant began to perspire freely and sleep badly. A little later he developed a series of furuncles on scalp and neck. For two months she stated he had sore eyes as the light seemed to worry him and he would burrow his face in the pillow. He had lost 3 lb., weight 17 lb. 15 oz.

Physical examination. Apathetic child, unable to sit up. Will not grasp at objects. Buries his face in the bed clothes. Skin. Few furuncles back of neck and scalp. Macular spots on back and front of chest. The hands and feet are pink and somewhat thickened. Throat reddened. Tonsils somewhat enlarged.

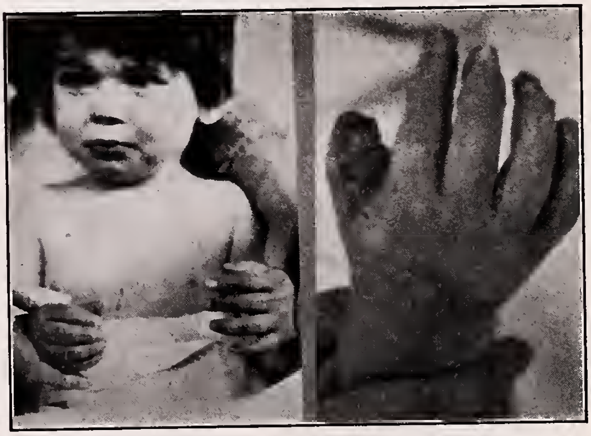
Fig. 1. Fig. 2.

Fig. 1. Illustrates beginning gangrene of fingers.
Fig. 2. Illustrates progressive nature of gangrene of thumb. Terminal phalanx eventually sloughed off.

Course in hospital: Temperature normal, refused most of his feedings. Stools normal, extremely irritable.

Laboratory examination. Urine negative: Von Pirquet, negative; Blood, r.b.c. 4,100,000; w.b.c. 10,400; polys, 60 per cent.

Four days after admission his hands and feet took on the characteristic desquamation.

Treatment: Quartz lamp, cod liver oil, diet for age.

Eight days after admission, as he was losing weight, a loss of 1 lb. 10 oz., it was suggested to the mother that the tonsils and adenoids be removed. She refused operation and took the child home against advice.

In response to a letter of inquiry on May 25, 1926, the mother stated the child began to slowly improve immediately on leaving the hospital and then more rapidly, and by January 31, 1925, he seemed quite well. Weight at present 25 lb.

Summary. From time of onset until recovery nine months, with no treatment other than home care in a country home, with people of average intelligence.

Case 4. Baby L., age 19 months, Jewish. Residence St. Vital, Man. First seen in office July 27, 1925.

Breast fed for ten months. Then whole milk mixture. Weight 19 lb. Shortly after weaning he had frequent stools, but responded to corrective dietetic treatment. Present feeding, mixed diet.

Present illness began March 1, when he became extremely irritable and would sleep but little. Would sleep with head burrowed in pillow. At same time excessive perspiration was noted. Associated with these symptoms there was gradual but progressive loss of weight. He was subject to recurrent attacks of diarrhea, and for two months has had a profuse nasal discharge.

Physical Examination. Weight 16 lb. Picture of misery, apathetic, listless. Sits with difficulty, marked loss of subcutaneous fat. Hair is thin over parietal regions.

I made a diagnosis of acrodynia, and strongly advised tonsillectomy. On hearing the diagnosis the mother informed me that the child was under the care of Dr. Brereton, and that I had confirmed his diagnosis. I returned the child to Dr. Brereton, to whom I am indebted for subsequent notes.

He first saw the patient May 3, at which time he made the diagnosis of acrodynia. Urine negative. On May 5 aural paracentesis was done. He was carried along with dietetic treatment, cod liver oil, etc., until August 28, during which time he had two attacks of rather severe diarrhea.

Sept. 2. Quarts lamp treatment begun. Five treatments were given by a local physician without result. Sept. 28, he was referred to Children's Hospital, where the method as outlined by Sweet[14] was instituted. He received in all nine treatments, being given every other day.

On Oct. 22 he was entirely well, again walking, weight 17 lb.

Dr. Brereton reports he has seen the boy at intervals since and that he is quite a normal child.

Tonsils removed Nov. 24. Dr. Bruce Chown, pathologist, Children's Hospital, took culture from depth of the tonsils. Growth was a pure culture of staphylococcus aureus. Sections were essentially negative. Duration of symptoms until recovery eight months.

Query. Did time affect the recovery or the mercury quartz lamp, according to method of Sweet, which was begun after the illness had lasted six months?

Two other cases of similar character and symptoms were reported.

SUMMARY

Six cases are reported, all in male children. There were two deaths from septicemia. With early diagnosis and treatment with quartz lamp one case recovered in six weeks. The three remaining cases recovered in nine months. Tonsillectomy in one case had no apparent effect in relieving the symptoms.

I am forced from a very limited experience to agree with Bilderback that treatment per se has much to be desired and that the good results obtained are not due to the treatment but depend largely on the mildness or severity of the infection

BIBLIOGRAPHY

1. Swift, D. H.: Trans. Aust. Med. Cong., 1914, p. 347.
2. Wood, A. J.: M. J. Aust, 1:145, Feb. 19, 1921.
3. Littlejohn, E. S.: Pink Disease, Erythredema, M. J. Aust. 50:689, June 23, 1923.
4. Thursfield, J. H., and Paterson, D. H.: Dermato Polyneuritis. Brit. J. Child. Dis. 19:27, March, 1922.
5. Paterson, D. H., and Greenfield, J. G.: Erythredema, Polyneuritis (so-called Pink Disease). Quart. J. Med. Vol. 17. No. 65. Oct., 1923.
6. Butler, J.: Erythredema. Arch. Dermat. and Syph. 11:166. Feb., 1925.
7. Bilderback, J. B.: Acrodynia. J. A. M. A. 84:495. Feb. 14, 1925.
8. Warthin, A. S.: Arch. Path. and Lab. Med. Vol. 1. 64, Jan., 1926.
9. Brown, A., Courtney, A. N., and MacLachlan, I. F.: A. Clinical and Metabolic Study of Acrodynia. Arch. Ped., 38:609. Oct., 1921.
10. Vipond, A. E.: Acrodynia and its Probable Causation. Arch. Ped. 39:699. Nov., 1922.
11. Byfield, A. H.: A Polyneuritic Syndrome Resembling Pellagra. Acrodynia Seen in Very Young Children. A. J. Dis. Child. 20:347. Nov., 1920.
12. Rodda, F. G.: Acrodynia, A. J. Dis. Child. 30:224. Aug., 1925.
13. Clarke, C.: Trans. Can. Soc. for Study of Dis. Child. 1923.
14. Sweet, G. B.: Acrodynia. Arch. Ped. Vol. 42:543. Aug., 1925.

PEDIATRICS IN GENERAL PRACTICE*

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No argument as to the importance of pediatrics in general practice is necessary. In this brief paper I shall not attempt to present anything new of a scientific nature. One in my position as a general practitioner in one of the smaller communities of the state is in no position to do this, but I shall discuss a few experiences and a case occurring in my somewhat limited practice in the last few months.

Meetings such as this and that of the Pacific Northwest Society bring to us brilliant men of research and study in the various sciences with messages which are really astounding as to the rapidity with which the fundamental branches of medicine are advancing. While in attendance at the recent meeting of the Pacific Northwest Society in Spokane, I was forcibly impressed by the effort of these men to apply the results of their research to the more practical problems of our everyday work.

For example, Ivy the physiologist, in his fascinating papers on the newer theories and experiments, applied the facts obtained to the clinical symptoms of ordinary diseases and used these facts as a basis for treatment. I wish to express my appreciation to those men and also to those in attendance at this meeting. I realize that without their work there would be practically no advancement. While appreciating this and with no desire to make any radical changes in the programs, I would like to see more general practitioners represented.

They do not have access to expert stenographers. Hospital facilities are often inadequate and haphazard hours make it difficult if not impossible to keep accurate systematic record of the course of cases and therapeutic results which in many cases could be profitably presented to the profession. Because of this much evidence which is tangible and not theoretical is lost.

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* Read before the Thirty-fourth Annual Meeting of Idaho State Medical Association, Sandpoint, Ida., Sept. 2-4, 1926.

For example, we had an extensive epidemic of scarlet fever in Bonner county last winter and, while we have no system and records are inadequate to prove our results, I know that in my own community by the use of scarlet fever serum as a prophylactic in perhaps fifty cases not one child who had been immunized developed the disease. This in spite of the fact that our community is compact. All live within a small area, practically all attend the one community church and all attend the same school.

In talking over this experience with other men of the county I could only find one child who developed the disease after being immunized. As a therapeutic measure I only used the serum in one case which was extremely toxic and died with apparently no effect from the treatment. However, men from other parts of the state, and I have heard particularly from Kellogg, report favorable results from its use as a therapeutic measure.

With pertussis vaccine I have had encouraging results. It has been my experience that the paroxysms are just as severe but are much lessened in frequency. That is to say, a child having from fifteen to twenty paroxysms in twenty-four hours after the vaccine will have from five to eight. Those of you who have had this disease in your own families will agree that that is worth while. I have been able to lessen the severity by combining with the serum treatment a prescription of antipyrin and sodium bromide.

While my experience and even that of the entire county is too limited to be of scientific value, the thought occurs to me that, since we are so reluctant to prepare papers and we do not keep systematic records, we might devise some simple method of reporting our therapeutic results with the newer methods such as we had with scarlet fever.

Possibly the easiest method would be to have form postal cards, such as are used for reporting contagious diseases, which could be sent to the county secretary, summarized by him and results sent to the state secretary. This would give us enough evidence from an entire state to be of considerable value.

I wish to present for your consideration at this time the very interesting case of Fay Bixel. I first saw her in May of this year when she was eighteen months of age. I received the following history.

When thirteen months of age, in November, 1925, she had an acute illness running a high temperature around 105.° A diagnosis was made of intestinal influenza. She was quite sick for about two weeks, being under the care of a competent physician. By Christmas she was apparently well and able to walk.

Late in April this year she was again sick with loss of appetite and other digestive disturbances and finally vomiting. Her trouble was at this time diagnosed by one physician as due to her teeth which she was then cutting, and another treated her for worms. By this time the loss of weight was somewhat alarming. When she was brought to me the case had the appearance of a severe digestive disturbance and malnutrition of an extreme type.

The physical examination was entirely negative except for the wasting. On questioning I found the baby was drinking large quantities of water and I accidentally discovered that she was continually wet. With these three symptoms—thirst, polyuria and wasting I had a suspicion and requested that they obtain for me a specimen of urine.

In an adult of course we test the urine in practically all cases coming under our observation but in infants the urinary disturbances are so rare that I have neglected such tests. The urine obtained was as clear as water, had a specific gravity of 1030 and one drop was sufficient to precipitate the copper and change the color of the solution to a deep yellow.

I told the father the results of the examination and what it would probably mean and made the prognosis so dark that he took the child to Spokane on the first train. Fortunately he approached competent men and I am indebted to Dr. Barnett for the following interesting reports.

"Baby Bixel was first seen by us on May 29, 1926, when she was eighteen and one-half months old. At that time the parents gave a history of three weeks illnes with, vomiting, temperature, excessive thirst and frequent urination.

"The child was very sick; there was a great loss of weight; the muscles were very flabby; sugar and acetone were found in the urine and the blood sugar was 333 mgm. She was put in the hospital on a diet of protein 25 gm., carbohydrate 25 gm. and fat 55 gm.

"Ten units of insulin were given three times daily before meals. Three days later, on June 1, the blood sugar was 143 mgm. On June 8 there was no sugar in the urine and the blood sugar was normal. On June 9 the child went home with instructions to give her 5 units daily before breakfast. The diet was increased to protein 25 gm., carbohydrates 25 gm. and fats 60 gm.

"During the baby's stay in the hospital the mother was educated and trained to test the urine, give insulin and weigh and measure the food. On July 6 the child was again seen. There was a history that in the month's time sugar had appeared but once and that time after an indiscretion in the diet. The child had been walking, was playful and showed a tremendous improvement."

We have the child here this morning. She is still getting the five units of insulin in the morning but is old enough now so that she is getting a variety of foods as follows: spinach, carrots, milk, bread made from diabetic flour, butter, cottage cheese, bacon and some fruit. The urine at this time is free from sugar and there is a constant gain in weight, being about two pounds the last month.

Of course the problem in this case as in all cases of diabetes is that of diet and insulin. But how about diet in infants so young that they are taking practically nothing but milk? You say it is so rare at that age that it is immaterial but possibly, if we forget the gastrointestinal tract long enough in some of our obscure cases to test the urine, we may find an occasional case even in infants.

According to Hartmann,[1] who has observed a number of cases of diabetes in infants, the following suggestions are appropriate. Milk is the basis of the diet for an infant under two years of age. A quart of milk, however, contains about 40 gm. of lactose and is therefore undesirable from the diabetic standpoint. If, however, the lactose can be removed from the milk, the protein and fat remaining can be utilized. This can be done by precipitating the casein with some such product as chymogen and straining off the whey which contains most of the lactose. The casein and most of the fat remain as curds.

Specifically, one teaspoonful of chymogen is added to one quart of milk and the mixture allowed to stand for one-half hour, then strained overnight through cheese cloth. The moist curds prepared in this way from one quart of milk weigh about 150 gm. and contain 25 gm. of protein, 25 gm. fat and 5 gm. of carbohydrate. They can be fed as such or mixed with water and shaken and fed from a bottle as milk. In addition some whole milk can be fed which should not exceed one pint, fresh fruit juices, vegetables, bread from diabetic flour and cod liver oil.

From the laboratory standpoint I find that Collins[2] used a little arithmetic and presents the following method to approximate the percentage of sugar in the urine, if laboratory facilities are not available and it is not always easy to obtain blood sugar percentages when far from a hospital. Use fresh Fehling's solution, ½ c.c. of each in a large test tube. Add 4 c.c. of distilled water and boil. If solution is clear after boiling, it is all right. Then add the urine drop by drop and reboil after each drop. If the first drop precipitates the copper and changes the blue to yellow, you have approximately 10 per cent of sugar. If two drops is necessary, 5 per cent is present and if one-half c.c. is necessary, you have approximately one per cent of sugar, etc.

An interesting point regarding the dose of insulin might be mentioned here. Those of you who were in practice at the time pituitrin was introduced will recall what a boon it was as a time saver, and you will also no doubt recall that it was used in doses of 1 c.c. and with much enthusiasm by practically everyone. Soon reports appeared of accidents from its use, such as ruptured uteri, and we became more conservative, some discarding it altogether. Then the manufacturer began putting it on the market in ½ c.c. ampoules. I now use it frequently in 3 to 5 minim doses, sometimes repeated but more often not, and with excellent results.

So with insulin. It is often found, according to Mosenthal,[3] that a smaller dose of the extract will bring about a greater digestion of starchy foods per unit of insulin than larger doses. As is often true of drugs, this is particularly true if it is given in smaller doses repeated often. In some cases four doses a day with a total of 40 units controls the carbohydrate metabolism when fewer injections totaling 120 units are insufficient in the same case.

Volumes have been written about diabetes since the introduction of insulin. All agree that it is a great aid in the treatment of diabetes but not a cure. Its efficiency is more startling in the extreme cases such as those which have gone on to a state of coma, but no one will doubt that this case before you would have terminated months ago without its use.

BIBLIOGRAPHY

1. Hartmann, A. F.: Med. Clin. N. A., Vol. 9, p. 69, July, 1925.

3. Mosenthal, H. O.: Med. Clin. N. A., Vol. 8,

2. Collins, D. B.: Med. World, Feb., 1924, p. 50.

p. 81, July, 1924.

METHOD OF OPERATIVE PROTECTION FROM SKIN INFECTION. In the method described by W. E. Johnston, Detroit (Journal A. M. A., April 23, 1927), the limb is painted with a 5 per cent solution of iodine from the fingers or toes to well beyond the next proximal joint from the operative field. Sterile stockinet of suitable width is then rolled on the extremity, so as to cover the limb to the same level. The stockinet should be of such width as to fit the limb snugly. The stockinet covered limb is placed on a sterile sheet. The remainder of the limb, the other limb and body are draped with sheets, as indicated. Collodion is next applied to the stockinet, covering the immediate operative field in sufficient quantity to penetrate the stockinet. When the collodion has dried, the stockinet is thereby glued to the skin. The incision is made through the collodionized stockinet, the skin and subcutaneous tissue. After the bleeders are clamped and tied, the cut edges of the stockinet are clipped to the skin margins with Michel clips. The small half-inch clips have been found the most efficient size to use with stockinet. The clips are placed about a half inch apart. With the added reinforcement of the Michel clips, the dissection, the operative procedure or the manipulations may be carried out with freedom without fear of exposing the skin surface. The closure is completed as far as the subcutaneous fascia before the Michel clips are removed. The skin incision is then closed after the stockinet has been separated from the skin surface. When the hand is in the region of the operation, a cotton glove is applied and glued to the skin, at the site of operation, with collodion.

SOME ATTRACTIONS OF BOISE

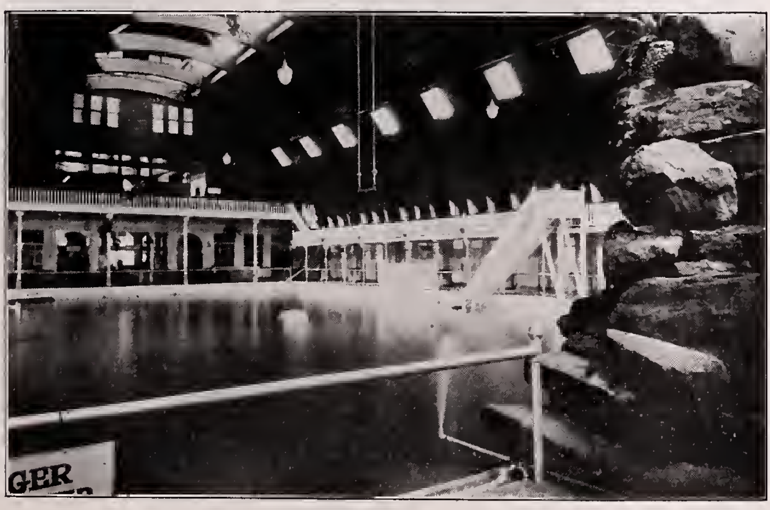
Boise, the capital of the state of Idaho, with a population of 26,000, is situated in a beautiful and fertile valley whose altitude is 2739 feet. Protected by surrounding mountains, it enjoys a mild winter climate with an average temperature of 50.9 degrees. The heat of summer is not excessive, its record never having included a case of heat prostration nor a destructive storm. Thus, it has an unsurpassed climate.

State Capitol

Irrigation is responsible for the fertility of the valley in which this city is located. Many rivers from the adjacent mountains provide facilities for storage of water from rains and melting snows. The most impressive work of man, seen in this section, is the Arrowrock Dam, twenty-six miles east of Boise, rising 348 feet in height, 91 feet of which is below the bed of the Boise River, said to be the highest dam in the world. It produces a reservoir nineteen miles long, storing 280 thousand acre feet of water.

Arrowrock Dam

Nature has provided Boise with many natural attractions. One striking feature is an abundant supply of hot water which is used directly from the earth for the heating of houses and public buildings. An attractive structure is the natatorium, the second largest indoor swimming pool in the world It holds 400,000 gallons of water, being supplied with 1,500,000 gallons of hot water per day from two hot artesian wells.



Natural Hot Water Natatorium

Near Boise are many natural playgrounds, sought by the people of the city at all seasons. The winter sports at Payette Lakes attract numbers of people and that section in summer time is among the most delightful in the West, from both a scenic and health standpoint. There are many other fine locations in the mountains, with good roads making them easily. Fishing and hunting afford opportunities for the devotees of outdoor sport practically all year around.

There is ample provision for recreation facilities with attractive parks, golf courses and gun club grounds. An unusual athletic diversion is polo. Boise is the smallest city in the United States to hold a polo tournament, which attracts many visitors to the city with polo teams participating from all western portions of the country.

St. Luke's Hospital

No city in the Northwest is better supplied with hospitals than Boise. There are two civic hospitals. The oldest, St. Alphonsus, was founded in 1892 and has been conducted from the beginning by the Sisters of the Holy Cross. It has been enlarged from time to time until today it stands as among the best equipped in this part of the United States. Last year an average number of 130 patients were treated continuously, nearly 1500 major and minor operations being performed. The buildings, including the hospital and detached structures, nurses' headquarters, etc., would completely fill much more than a city block.

U. S. Veterans' Bureau Hospital

St. Luke's hospital is an Episcopal institution, founded in 1902. More than 25,000 patients have been treated there, numbering last year about 2000 with 1185 operations. A three-story brick nurses' home is included in the hospital buildings. Plans are under way to double its capacity. Both hospitals are standardized and recognized as Class A by the American College of Surgeons.

There is also a United States Veterans' Bureau Hospital, occupying an area of about fifty acres. It includes five hospital buildings, with 235 beds and an average of 190 patients. Seven full-time physicians, one dentist, two attending specialists and about one hundred and twenty employees form the personnel of the government hospital. It is an accredited institution and in addition to excellent surgical and other hospital equipment is supplied with swimming pools, nurses' home, etc. It boasts of the finest equipped physiotherapy department of any hospital in the entire West. Veterans from over the West are sent to this hospital, especially those suffering from tuberculosis, on account of the splendid facilities, plus the beneficial Boise climate.

There are forty practicing physicians in Boise and over one hundred and fifty within a radius of a hundred miles. The specialties are well covered by this group. A fine spirit of cooperation exists among the local men and those of the surrounding country.

NORTHWEST MEDICINE
The Journal of the State Medical Associations of Oregon, Washington and Idaho
Devoted to the interests of the Medical Profession of the Pacific Northwest

Editorial Office, 543 Stimson Building, Seattle, Wash.

MAY, 1927

EDITORIAL

THE CLEVELAND MEETING OF AMERICAN COLLEGE OF PHYSICIANS

The American College of Physicians met in its eleventh annual clinical session at Hotel Cleveland, as the guest of The Cleveland Academy of Medicine and the city of Cleveland, February 21-25, Dr. John Phillips being General Chairman. About fifteen hundred internists were in attendance, representing forty-three states, Canada and England. Clinics, lectures and demonstrations were given in twenty-five hospitals, clinics and other medical institutions. The medical department of Western Reserve University afforded excellent opportunity for laboratory, clinical and didactic instruction. Lavish entertainment was provided for all and the session was voted among the College's best.

New Fellows were elected at this session to the number of 134, as well as 41 Associate Members. A revised Constitution and By-Laws was adopted, important busines transacted and officers elected. The new officers for 1928 are President, Frank Smithies, Chicago; President-Elect, Charles F. Martin, Montreal; First Vice-President, Alfred Scott Martin, Ann Arbor; Second Vice-President, S. Marx White, Minneapolis; Third Vice-President, Stewart R. Roberts, Atlanta; Treasurer, Clement R. Jones, Pittsburgh; Secretary-General, George Morris Piersol, Philadelphia. Meeting place 1928, New Orleans, La.

The objectives of the American College of Physicians are to uphold and maintain high standards in medical education and practice, to encourage research, especially in clinical medicine, to foster measures for the prevention of disease and for improving public health, to perpetuate the history and best traditions of medicine and to maintain high standards of medical ethics, and to maintain the dignity of our profession in its relationship to patients. During the past few years the Hospital Efficiency Committee of the College has worked in harmony with a like committee of the American College of Surgeons and has been active in upbuilding the standards of hospitals in the United States and Canada. The College at this session started a drive through its members and other channels to impress the absolute need of *autopsies* as the best index of medical practice and the greatest source of our knowledge. The general public needs education on this vital subject, autopsies should be more frequently demanded and executed, and efficient notes and records filed in every hospital and private case.

Every paper and demonstration presented at the afternoon and evening sessions of the College were of vital importance, showing the best and newest methods, investigations and treatment in the field of internal medicine. It would be impossible to summarize these talks satisfactorily. Some of the high lights may be briefly mentioned.

Dr. D. W. C. Stone, Cleveland, reported 108 cases of fully confirmed general paresis, treated during 1925 and 1926 in the Cleveland City Hospital by inoculation with tertian malarial plasmodium. The strain used was taken from a normally acquired tertian malaria. The infected blood was injected into the patients to produce the infection. Seven cases gave no response. Of the remaining 101 responding with acute malaria, 87 were males and 14 females, varying in age from twenty-four to sixty years. Thirteen died, 6 from infective cellulitis, 4 from pneumonia, 2 from apoplectic seizures and 1 from lowered resistance. Thirty-eight were discharged to their homes, of whom 18 have resumed their work; 20 were much improved and a number of these should be doing something. Fifty remaining cases showed 25 as unimproved and 25 as somewhat improved. In 1925, the Rockefeller Institute introduced tryparsamid, which was used in some of these cases after the acute malaria had subsided and with apparently good results. While Dr. Stone figures about 38 per cent of marked improvement in his inoculation cases, he cautions, "It must not be heralded with too much acclaim, but it does promise."

Dr. W. E. Bastedo, New York, sounded a word of caution on the indiscriminate use of digitalis as a heart stimulant. Contrary to general belief, it is not contraindicated in nor does it increase hypertension.

Dr. H. G. Beck, Baltimore, spoke on chronic monoxid poisoning. He stated that an habitual tobacco smoker's blood has a carbon monoxid saturation of from 8 to 22 per cent, while 30 per cent saturation is the danger point. In Baltimore, sixty persons died during 1926 from carbon monoxid poisoning from automobiles and other sources, enough cases, were they smallpox, to throw the city into a panic. No traffic officer in a congested street should be exposed to the fumes of automobiles for a longer period than four hours at a time, as it endangers his health and shortens his life. Two-tenths of carbon monoxid in the air is dangerous, while four-tenths will produce death in an hour. He sounded a warning against open heaters that are not properly vented.

Dr. E. P. Joslin, Boston, cautioned against over-dieting or starving in diabetes. In the study of this disease we must have more autopsies, especially among the Jews, who are twice as susceptible as other races. "If a diabetic has lived ten years without your help, be sure that you can make him live another ten years at least before you tamper with his diet."

Dr. C. H. Best, Toronto, codiscoverer with Banting of insulin, demonstrated that the latter favors the deposit of glycogen in the muscle tissues, and that glycogen is essential before muscles can do their work.

Dr. W. McKim Marriott, St. Louis, told of "The Relationship of Focal Infections to General Diseases in Infants and Young Children." He stressed mastoid antrum infections, often on both sides, in many cases of old nutritional disturbances requiring antrotomy, and spoke of sinus infections causing enlarged cervical glands, heart murmurs and nephritis.

Original papers and transactions of the American College of Physicians will be published in *Annals of Clinical Medicine,* its official periodical.

AMERICAN COLLEGE OF SURGEONS MEETING

The Pacific Northwest sectional meeting of the American College of Surgeons, which was held at the Olympic Hotel in Seattle, April 11 to 12, proved to be a very successful one. A large number of the Fellows of the College from British Columbia, Oregon, and Washington were in attendance. The meetings consisted of clinics given by Seattle surgeons at the various hospitals during the mornings. The scientific addresses were given at the Olympic Hotel during the afternoons by prominent surgeons from Eastern cities and also by well known men from the Northwest district. There were also present a large number of people interested in hospital work from the various cities of the Northwest, who took an active part in the hospital conferences which were conducted by Dr. Malcolm T. MacEachern of Chicago, who is the Associate Director of the American College of Surgeons, having charge of hospital activities, and recently President of the American Hospital Association. He was assisted by Rev. C. B. Moulinier, S.J., of Milwaukee, who is President of the Catholic Hospital Association of America, and who has given much of his time during the past ten years to assisting the American College of Surgeons in the work of hospital standardization. In addition to the conferences at the hotel the visitors attended the exhibits put on by several of the City hospitals.

The banquet on the evening of the eleventh, which was largely attended, was in honor of Dr. Franklin H. Martin of Chicago, Director General of the American College of Surgeons, to show appreciation of his great work in organizing and directing the work of the American College of Surgeons and its annual Clinical Congress of Surgery, and also his splendid work in the standardization of hospitals in the United States and Canada On the second evening a public meeting was held in the Assembly hall of the Chamber of Commerce, devoted to Community Health. This was well attended and was addressed by prominent men from the East who were in attendance at the sectional meeting.

PACIFIC NORTHWEST MEETING AT BOISE

The professional men and women of the Northwest will enjoy a pleasant vacation period and a profitable medical program who plan to attend the session of Pacific Northwest Medical Association at Boise, June 27-29. A sufficient number have aleady indicated their intention of being present on this occasion to assure a successful assembly at this time. It is necessary to emphasize the importance of indicating in advance one's purpose to join the excursion to Boise, in order that reduced rates may be assured for the benefit of all visitors. The advantages to be gained from the special train can be secured only if one hundred and twenty-five indicate their intention to travel by it. The saving in money and time on the part of those going from the Coast ought to be sufficient to obtain the desired number. In our last issue, by reason of an error, the registration fee was stated as fifteen dollars. It should have been ten dollars.

The Bureau of Registration will be located in the lobby of the Owyhee hotel. Members of the various local committees will be on hand to assist visitors and their wives in every possible way.

The main meetings will be held in the spacious High School auditorium. This hall has a seating capacity of 2000. The Boise High School building covers a city block and is provided with large halls for the holding of sectional meetings and providing space for technical and commercial exhibits.

A special entertainment committee has made extensive preparation for the entertainment of guests and their ladies. Boise boasts of one of the foremost golf courses in America; two other courses are available, the Boise Country Club and the Mountain View Club. These clubs have enthusiastically offered the use of their courses to members during their visit in the city. These are close to Boise and can be easily reached in a few minutes.

The local committee has made other elaborate preparations for the entertainment of guests and visiting ladies. Special trips to many points of interest in and near Boise will be shown by the local committee, such as Arrowrock dam and reservoir, sky line drive, sunset drive and a loop trip through the famous Boise valley. Trips to other historic and distant points are being arranged for.

There will be a number of luncheons for members of various local and state groups about noon each day. A number of dinners for members of various groups and organizations have been provided for. An association banquet will be given Wednesday night, June 29.

The program of papers and addresses has been published in this journal and has been widely distributed. On it appear men of national reputation in many lines of practice, including medicine, surgery and several specialties. Thus every practitioner will be able to secure something of interest and value from the program that will make his attendance profitable and worthwhile.

MEDICAL NOTES

Medical Education and Practice. The "Preliminary Report of the Commission on Medical Education" has been published and will be furnished without cost to anyone desiring a copy. Address Commission on Medical Education, 215 Whitney Ave., New Haven, Conn.

OREGON

Otolaryngologists Convene. The annual meeting of the western section of the American Laryngological, Rhinological and Otological Association was held at Portland April 1. The annual banquet was held at the Arlington Club. Dr. John E. Weeks, professor emeritus at the University and Bellevue Medical College, New York, addressed the members on the subject of "The Causative Relation of Diseases of the Nose, Throat and Accessory Sinuses to Diseases of the Eye."

Canadian Physiologist Lectures. Dr. John R. MacLeod, professor of physiology at the University of Toronto, Ontario, was the guest speaker at a dinner given by the Portland Academy of Medicine March 28. He discussed recent advances in the knowledge of diabetes and in the use of insulin. Insulin was discovered in 1922 by Dr. MacLeod and Dr. Frederick G. Banting, as a result of their researches at the University of Toronto.

Portland to Entertain Tuberculosis Association. The executive committee of the National Tuberculosis Association has announced that its 1928 convention will be held at Portland. Dr. Ralph C. Matson, of Portland, and Dr. G. C. Bellinger, Salem, are members of the board of directors of the association.

Object to School Medical Tests. A petition signed by 275 parents of Portland children has been sent to the school board, in which it is alleged that school doctors and nurses are illegally performing medical tests without the parents' consent. The petitioners do not object to routine examination of the children by school physicians.

Council Defends Health Officer. Following a proposal by the Oregon Public Health Association that Dr. J. Edgington, city and county health officer of Hood River, be removed from office for alleged laxity in enforcement of quarantine laws, Mayor Stranahan and the Hood City Council have declined to take such action until the charges are substantiated by proof.

Receives Research Fellowship. Dr. Richard Thompson, county health officer and director of the Douglas County Health Unit, has been awarded a two years' fellowship in the National Research Council. He will leave July 1 for Columbia University, New York, where he will begin studies in the fields of immunology and bacteriology.

Makes Goiter Survey. Dr. Robert Oleson, of the United States Public Health Service, is at present engaged in making a goiter survey of the state of Oregon. He recently examined the high school students at Roseburg.

Joins Rockefeller Foundation. Dr. Thurston W. Laraway, who has been engaged in practice at Vernonia, has been awarded a fellowship in the Rockefeller Foundation. He left recently for Andalusia, Alabama, where he will begin his new work.

Honor Pioneer Physician. A dinner in honor of Dr. Andrew J. Giesy was held by the staff of the Good Samaritan Hospital, Portland, March 23. The doctor has completed fifty years of active medical practice, the last forty of which have been spent in Portland.

Hospital Closed. St. Mary's hospital at Albany, which has been operated for twenty-one years by the Sisters of Mercy, closed on April 1. The action resulted from inadequate revenue to meet the expense of operation.

Oregon Academy of Ophthalmology and Oto-Laryngology held a meeting at Portland April 18. Dr. H. V. Wurdemann of Seattle read a paper on "The

Relations of Cupping of the Optic Disc to the Visual Fields in Glaucoma."

Bequest to Children's Hospital. The residuary estate of Samuel and Mary McKee, of Portland, has been transferred by the executors to the Doernbecher Memorial Hospital for children.

Heads Hospital. Dr. B. R. Wallace has been elected president of the Albany Hospital Association.

Portland City and County Medical Society met at the East Side Business Men's Club April 6. Dr. Frank Menne read a paper on "Adenoma of the Thyroid." Dr. Ralph Matson discussed "The Surgical Treatment of Tuberculosis."

Dr. Wilmot Foster, of Eugene, has been awarded a three years' scholarship in the Rockefeller Foundation. He has left for Rochester, Minn., where he will carry on his work at the Mayo Clinic.

Dr. R. I. Hall, of Hibbard, has moved to Vernon, where he will engage in practice.

Dr. E. A. Wrightman, of Silverton, who has been recuperating in Arizona from a recent prolonged illness, returned recently to renew his practice.

To Study Abroad. Dr. John N. Coghlan left April 20 for France and Austria, where he will spend several months in travel and study.

WASHINGTON

Hold Community Health Meeting. A feature of the convention of the Northwest section of the American College of Surgeons, held in Seattle in April, was a community health meeting at the Chamber of Commerce. Several of the invited speakers for the convention addressed the lay audience on public health topics. The meeting was held under the auspices of the Public Health League of Washington.

Art Exhibit by Physicians. At an exhibition of works in the plastic and graphic arts by American physicians, held at the New York Academy of Medicine in March, there were included two works by Dr. Frederick Adams, of Seattle. The titles of his oil paintings were "Landscape" and "Winter Scene." Dr. W. B. S. Thomas, of Bellingham, exhibited several wood carvings. He has also gained fame as an etcher, one of his etchings having been included in the permanent collection of America's etchers at the New York Library.

Seattle to Retain Morgue. Following a recent movement by the King County Commissioners to consider abolishing the King County morgue and transferring the work to local undertakers, Dr. W. J. Jones, coroner, and Dr. W. H. Corson, deputy coroner, were able to convince the commissioners that the undertakers are entirely satisfied with the present conditions and that the morgue should continue.

To Study Cancer Heredity. Following the recent visit of Dr. Maude Slye of the University of Chicago, who reported her investigations on heredity of cancer in mice, the Seattle Academy of Surgeons has established a bureau for the collection of cancer statistics, with especial reference to heredity. The bureau, which will be known as Cancer Archives, is located in the Medical and Dental Building. Physicians are invited to submit data and microscopic sections from their carcinoma cases.

Noted Pediatrician Speaks. Dr. Henry J. Gerstenberger, Professor of Pediatrics in Western Reserve Medical School, Cleveland, Ohio, was the guest of the Seattle Society April 22. At a luncheon at the University Club, given in his honor by Dr. Jay I. Durand, he addressed the members of the society on "The Etiology of Rickets."

Appointed County Health Officer. Dr. George H. T. Sparling of Seattle has been appointed health officer of Walla Walla city and county, his service beginning June 1. He has been health officer of King county for the past fourteen years.

Organize Rural Clinic. Drs. H. M. Fryer, L. S. Dewey, Arthur E. Lien and George Routledge of Okanogan County have organized the Okanogan County Clinic, with headquarters at Omak hospital. Offices and other medical service will be supplied in several towns in the county at regular intervals. By this means communities which have been without a local physician will be supplied with dependable medical service.

Leases Sanatorium. Dr. J. W. Snoke has leased his sanatorium at Puyallup to Dr. A. Stewart, and will move to Seattle in the near future.

Begin Hospital Construction. At an informal ceremony held April 22, ground was broken for the new $200,000 addition to the Children's Orthopedic Hospital, Seattle.

King County Antituberculosis League at its meeting in Seattle April 22 was addressed by Dr. John A. Smith of New York, Medical Secretary for the National Antituberculosis Association and executive secretary of the American Heart Association.

Addition to Sanatorium. An addition has been completed to Oakhurst tuberculosis sanatorium at Elma, at a cost of $50,000. At the same time the old building was remodeled, physiotherapy and occupational therapy rooms being provided. The new building will accommodate twenty-seven patients, making a total capacity of sixty-five.

Will Honor Physician by Memorial. The Snohomish County Medical Association has announced plans to erect a permanent memorial to the late Dr. E. C. Folsom, who was the first physician to practice in Snohomish. A monument to him has already been erected.

Dr. Arthur C. Kuehner, of Chehalis, has become associated with Dr. A. L. Maclennan in his practice at Raymond. He succeeds Dr. J. J. Gosnell, who has moved to Canada.

Dr. C. H. Hofrichter of Seattle has gone abroad for several months of study and travel.

Dr. Leroy R. Jones, of the staff of the Veterans' Bureau hospital, Walla Walla, has resigned. He has accepted a position as Inspector of Indian Schools at Espanola, New Mexico.

Dr. Jas. H. Lyons of Seattle has been seriously ill at the Columbus Hospital. He was stricken while on a tour in Italy, and for a time was confined to a hospital in Rome. His condition is now improved.

Dr. A. C. Brown of Stanwood suffered a severe blood infection in April, but is now reported to be out of danger.

Dr. W. O. Bell of Seattle has gone to Europe for a four months' visit. He will devote the time to study of ophthalmology, visiting clinics of all leading cities of the continent.

Medical Weddings. Dr. James Fitzgerald Battle and Miss Leora Dolores Garriott, of Seattle, were married April 20. Dr. A. E. Myrick, of Monroe, was married to Mrs. Kitty Jones, of Big Sandy, Montana, April 14. Dr. O. E. Johnson, of Cheney, and Miss Ruth Matthies, of Pomroy, were married Feb. 21. Dr. William B. S. Thomas, of Bellingham, was married to Dr. Ruth Boring, of New York, April 12. They will establish a joint practice in Bellingham.

IDAHO

Eugenic Board Meets. The first meeting of the Eugenics Board, which was provided for by the 1925 legislature to determine the sterilization of unfit citizens, was held at Boise April 25. The law provides for operations on persons who have given their own or their guardian's consent, and also in cases where consent is not given. It is expected that a trial case will be made to test the constitutionality of the act.

Licensed to Practice. At the meeting of the Idaho state board of medical examiners, held at Boise April 12, the following physicians were admitted to practice. By examination: Drs. C. R. Weaver, Twin Falls, and R. A. Lower, Spokane, Wash. By reciprocity: Drs. N. C. Traube, Boise; H. W. Shryrock, Bovill; E. C. Mitchell, Priest River; C. B. Rydell, Superior, Wis.; J. E. Otte, Grace, and C. A. Meyers, Troy.

Pocatello Medical Society held a banquet at the Bannock Hotel April 8 in honor of Dr. H. A. Castle, of Pocatello, and Dr. C. A. Hoover, of Blackfoot. Both are pioneer physicians of Southern Idaho.

Appointed Prison Doctor. Dr. O. H. Parker of Boise has been appointed assistant to Dr. George Collister, chief physician of the Idaho State penitentiary.

Dr. R. J. Alcorn of Sandpoint has been appointed chief surgeon of the Alaska railway, with headquarters at Anchorage.

Dr. E. H. Teed of Coeur d'Alene has resumed his practice after several months' graduate study at Chicago.

Heads Child Hygiene Work. Dr. Dorothy Rich of Lava Hot Springs has received a two year appointment as State Director of Child Hygiene. This office is provided under the Sheppard-Towner act for the purpose of organizing and developing prenatal and child hygiene education throughout the state. She was formerly associated in practice with her husband, Dr. C. A. Rich, superintendent of the Municipal Sanitarium at Lava Hot Springs.

OBITUARIES

Dr. Perley Raymond Brenton, Tacoma, Wash., died at Fort Steilacoom April 6, following a brief illness from pneumonia, aged 51 years. He was born in Victoria Vale, Nova Scotia, in 1876, and graduated from the College of Physicians and Surgeons of San Francisco in 1901. He practiced several years in Everett, Wash., before moving to Tacoma. For the past three years he had been a member of the medical staff of the Western Washington hospital at Fort Steilacoom. In his earlier years he was prominent in civic affairs in Tacoma and at one time city health officer.

Dr. Thomas F. Smith, Tacoma, Wash., died in a local hospital April 6, aged 80 years. He was born in 1847, and graduated from the college of Physicians and Surgeons, Keokuk, Iowa, in 1874. He came to Tacoma from Spokane in 1888 and became physician for the Northern Pacific Railway Company, and later for the Tacoma Railway and Power Company, which position he held until his retirement in 1920. He was also a widely known sportsman and expert rifle shot.

Dr. Henry Joseph Schenk, Portland, Ore., died April 7, aged 43 years. He was born at Nauvoo, Ill., in 1884, and graduated from the medical department of St. Louis University in 1908. After practicing several years in Eastern Oregon he located in Portland. He was a veteran of the World War.

Dr. William L. Ludlow, Kapowsin, Wash., died at a hospital in Eatonville April 14, aged 62 years. He was born in 1865, and graduated from New York University Medical College in 1893. He served as a naval surgeon in the Spanish-American war, and was a medical missionary at St. John's College, Shanghai, China. From 1904 to 1912 he was commissioner of public health at Seattle. Later he practiced at Kapowsin.

Dr. Oscar H. Urstad, East Stanwood, Wash., died suddenly at his home March 30, aged 56 years. He was born at Oslo, Norway, in 1870 and emigrated to New York at the age of eighteen years. He graduated from the Central College of Physicians and Surgeons, Indianapolis, Ind., in 1900. Later he took postgraduate work in Europe. He practiced several years in Minnesota. He was a captain in the Medical Corps during the late war. In 1924 he moved to East Stanwood where he remained until his death.

Dr. Edward Bailey, Seattle, Wash., died at his home March 30, aged 64 years. He was born in 1862, and graduated from Rush Medical College in 1895. He came to Washington in 1889 and served for several years as physician on the Snohomish Indian Reservation. Later he was in government service in China, the Philippines and Alaska. He was a major in the medical corps during the World War. More recently he was connected with the Veterans' Bureau at Seattle.

REPORTS OF SOCIETY MEETINGS

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., G. J. Wanamaker; Secty., W. W. Bell

A special meeting of the medical section of the society was held in the auditorium of the Medical and Dental Bldg., Seattle, 8:15 p. m., March 31, with Dr. Homer Wheelon in the chair.

The program consisted of an address on endocrinology by Dr. J. J. R. MacLeod, of the University of Toronto, intrduced by Dr. C. H. Hofrichter. The use of the ductless gland extracts in medicine is more highly recommended than warranted by results, although many important discoveries have been made regarding their applications and physical effects. He divided the glands into three groups. The first includes the posterior lobe of the pituitary, medulla of the adrenal, and islands of Langerhans in the pancreas, all of which produce hormones for immediate results. The second group includes the anterior lobe of the pituitary, the cortex of the adrenal and gonads, both male and female, the results of their administration being gradual and producing slowly developing changes. The third group includes lymph glands and hematopoietic glands which have morphologic effects and are not really ductless glands. He described the pathologic actions of each group. In the discussion of insulin he raised the question whether it is derived exclusively from the island of Langerhans. He gave reasons for believing this to be true. He stated there may be a partial recovery of function of the island of Langerhans following its use. He discussed the action of the anterior lobe of the pituitary, describing the results of its deficiency. The parathyroids control the percentage of free calcium in the blood. Parathormone, isolated by Collip, has been shown to have the same physiologic effects as parathyroids.

A general meeting of the society was held April 4, at 8:15 p. m., with President A. T. Wanamaker in the chair. Minutes of the meeting of March 7 were read and approved. There were 124 members and guests in attendance.

Applications for membership were read from Drs. Conrad Jacobson, A. L. Brant and B. N. Collier. Drs. F. P. McNamee and Adolph Weinzirl were elected to membership.

The first feature of the program was an address and demonstration of "Periodic Health Examinations of Apparently Well Persons." Dr. W. B. Penney, of Tacoma, explained the effort being made by the state association, through President H. G. Willard, to excite an interest among the profession in periodic health examinations.

Dr. F. D. Stricker, of Portland, gave an address on this subject emphasizing the importance of a complete history, with special attention to the details of previous history. According to life insurance estimates, the average expectancy is 55 years, the most useful period being 18 years, during which the individual exercises his best competitive faculties. The increase of expectancy during recent years has greatly added to the economic value of the population. These examinations should be done leisurely, consuming about an hour.

Dr. Lawrence Selling, of Portland, gave a demonstration of the physical examination, going into detail with the methods for examining all of the organs. Routine laboratory work for urine, blood and hemoglobin are of value.

Dr. D. V. Trueblood read a biographical sketch of the life of Lord Lister in celebration of the one hundredth anniversary of his birth, in which were recited many interesting occurrences of his eventful career, with descriptions of his scientific and professional activities.

PIERCE COUNTY MEDICAL SOCIETY

Pres., E. F. Dodds; Secty., W. B. Penney

The regular meeting of Pierce County Medical Society was held in its rooms April 12, 1927. The meeting was called to order by the president, Dr. E. F. Dodds, Dr. C. F. Engels acting as secretary pro tem.

The scientific program consisted of an address by Dr. T. R. Steagall on the life of Lord Lister. Dr. Christen Quevli was able to add some personal recollections.

The paper of the evening was given by Dr. H. L. Hull, of Elma, on "Tuberculosis from the Standpoint of X-ray Diagnosis." He showed a large collection of very interesting films, and presented a comprehensive address covering the subject. Discussion by Drs. Quevli, J. F. Steele, Fishel, Engels and Howe.

Nominations for officers for the next year resulted as follows:

President, Drs. E. C. Wheeler and C. C. Leaverton; Drs. Dayton and James were also nominated, but withdrew their names. Vice-President, Drs. A. W. Howe and C. F. Engels; secretary, Drs. E. F. Dodds and W. B. Penney; trustees, Drs. W. A. Monroe, C. J. Brobeck, E. F. Dodds and R. H. Beach; delegates to State Society, Drs. C. D. Hunter and E. F. Dodds; alternates, Drs. J. B. McNerthney and J. B. Robertson.

SPOKANE COUNTY MEDICAL SOCIETY

Pres., Mitchell Langworthy; Secty., R. M. Schulz

Spokane County Medical Society met April 14. Dr. R. R. Spencer, of the spotted fever laboratory at Hamilton, Montana, discussed his investigations of wood tick diseases in the Bitter Root Valley, including experiments in vaccination.

WHITMAN COUNTY MEDICAL SOCIETY

Pres., D. T. Ford; Secty., J. E. Preucel

Whitman County Medical Society held its annual meeting on April 4, 1927, at 8 p. m., Colfax, Wash.

Drs. D. T. Ford and W. A. Mitchell were reelected president and vice-president, and Dr. J. Edward Preucel, secretary and treasurer.

Various business was disposed of. Under new business Public Health Education on the various phases of preventive medicine was largely discussed and it was agreed to continue the work that was started along this line last year. The Radio Health Talks from station KWSC, Pullman, will be continued every first and third Fridays of every month, at 8:30 p. m.

Under the scientific program "Scarlet Fever, Prevention and Treatment," was taken up where it was left off at the previous meeting and a very instructive discussion, lasting about one hour, brought out some valuable observations. All of the members present took part in the discussion.

The next meeting will be held in Colfax late in June.

PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

Pres., H. V. Wurdeman; Secty., M. J. Morris

A meeting of the Puget Sound Academy of Ophthalmology and Oto-Laryngology was held in Tacoma, April 19, at 8:30 p. m. The meeting was devoted to exposition of clinical cases.

Dr. E. C. Wheeler presented a case of old iridocyclitis with corneal changes, following erysipelas eighteen months ago. Also a case in which two Elliot trephines had been done.

Dr. Balabanoff presented two cases of brain abscess, two of simple mastoid and a tumor of the iris with detachment of the retina.

Dr. Cameron presented a case in which double cataract had been done, following which there was loss of vision due to glaucoma. It was the consensus of opinion that an iridectomy would be of no value.

Dr. C. V. Lundvick showed a case of albuminuric neuroretinitis in a man of forty-three years of age. Optic discs were both swollen and hyperemic, arteries small and veins swollen. There were many patches of fresh exudate and fresh hemorrhages along the vessels.

Dr. G. E. Griffith exhibited a case of focal infection in the ethmoid and sphenoid cells which were operated on for headaches and pain in the joints. When the sphenoid and ethmoid areas became blocked the pain recurred in his knees but was relieved in fifteen minutes or less by cocainizing the right side of the nose.

Dr. Griffith also showed a case of epidermal carcinoma, grade III, of the nasopharynx. Deep x-ray therapy was used.

Dr. A. E. Hillis presented a case of albuminuric retinitis which was associated with blood pressure of 220, aortic insufficiency and cardiac enlargement, with albumin and hyaline casts in the urine.

IDAHO

SOUTHWEST IDAHO MEDICAL ASSOCIATION

Pres., F. B. Brewer; Secty., A. B. Boelk

Southwest Idaho Medical Association held its annual spring meeting at Boise, April 1. Clinics were held in the morning at St. Luke's and St. Alphonsus' hospitals. At the afternoon session Dr. Frederick Epplen, of Spokane, Wash., discussed "Some New Views on Nephritis." Dr. Mitchell Langworthy, of Spokane, read a paper on "Industrial Fractures and Dislocations." Dr. C. N. Codd, of Spokane, talked on the subject of bronchoscopy. The evening meeting was devoted to papers by Dr. J. P. Kerby, of Salt Lake City, Utah, on "Osteitis Deformans," and a discussion by Dr. Fred J. Mayo, Rochester, Minn., on "Anatomical Relations."

PUBLIC HEALTH LEAGUES

WASHINGTON

SANIPRACTIC DIPLOMA MILL

Troubles pile upon the shoulders of "Doctor" John E. Lydon, former president of the American "University" of Sanipractic. First his school lost its charter by court action as the result of diploma mill activities. Then the Public Health League had passed the license revocation bill which provided machinery for the withdrawal of nearly 100 licenses for fraud. Now come some of the "doctors" with a court action, seeking rebate for fees paid in to the institution, some of them as high as $900 for the three-year course.

If these actions are successful it will mean probably that the fees given to this sanipractic school by the 100 who lost their permits from the state must be returned. This will run into thousands of dollars as the fees paid, according to testimony in the sanipractic trial, ranged from $3.75 to several hundred dollars each. Diploma milling in Washington appears now to be clearly in the class of hazardous occupations.

OSTEOPATHIC RULING

A ruling recently obtained from the office of the Attorney General as to the rights of osteopaths to use and prescribe drugs and medicines is sweeping in its text. Assistant Attorney General Donnely holds in this decision that this healing group is estopped from using drugs and medicines. Even the surgical osteopath, with his special license, is denied this right, though he does have the power to give anesthetics.

Lack of exact definition of powers to this group has resulted in a somewhat general practice of using drugs in various ways. It is the old story of a limited license being stretched to cover the entire medical field. It is believed that Mr. Charles Maybury, director of licenses, to whom the opinion was delivered, will take appropriate steps to enforce the illegal restrictions called for in the act creating an osteopathic branch of healing.

THE BASIC SCIENCE ACT

A flood of inquiries have come into the League office asking for copies of the Basic Science Act. Medical and public health associations over the country are studying the measure with the purpose of pressing similar legislation elsewhere. That the Gorgas Memorial Institute will favor such an act for other states and will make this one of its educational and legislative objectives is indicated by a speech made by Dr. Franklin Martin, president of the institute, at a public meeting in Seattle, April 12. He gave high praise to the profession of Washington on its health policy which meant the passage and signing of this very important health measure. "It should be a law in every state," he said.

The new act takes effect June 8. Under its provisions every applicant for license must take this test. Reciprocity is disturbed only to the extent that all applicants are required to pass the fundamental examination before seeking reciprocity privileges under the professional acts. Reciprocity, therefore, is available only after the basic science examination has been successfully taken.

IDAHO

VICTORY COMPLETE

What is believed to be the Idaho League's biggest victory was won April 19 and 20, when the Idaho Industrial Accident Board agreed to the schedule, as submitted by the Industrial Medical Committee, with a few minor exceptions. The medical committee is composed of Drs. J. L. Stewart, Boise; D. L. Alexander, Twin Falls; C. C. Conant, Weiser.

There has been a bitter struggle going on between the Industrial Accident Board, the State Insurance Fund on the one hand, and the physicians of Idaho on the other. The physicians, at the call of the Board in February, 1926, selected a committee to revise the old schedule, and after months of work a schedule was presented the last of May, 1926. On September 1, 1926, the Board released their now famous "red-covered" schedule which ignored the profession and committee. Advance copies were secured and at the meeting of the State Medical Association, held in Sandpoint, the profession rejected the schedule and passed a resolution refusing to work under it. However, negotiations were entered into with the Board a few days later for a revision of the little "red cover." After months of painstaking work and numerous conferences between the Board and committee, a revised schedule was adopted April 20.

The principal objection to old "red-cover" was the mileage fee of 40 cents a mile. Another serious one, and the one that caused the severest condemnation, was that allowing the physician only 50 per cent of his fees in the event that the injured employee died within five days. The League compiled the opinion of the League members for the purpose of submitting them to the Board. These were carefully classified as to items and fees. (Parenthetically speaking, some of the letters were so hot they burned the paper, and no foolin'.)

The Idaho League has had a stormy career and numerous bitter struggles, but the feeling exists throughout the entire membership that in securing a new fee schedule we have obtained our greatest victory, both morally and financially.

HOSPITAL RATES RAISED

The new manager of the State Insurance Fund, Fred Fisk, has raised the hospital rates from $2.50 to $3.50 per day. The League made a survey of hospital costs in Idaho, submitting the results to the Fund, and Mr. Fisk agreed to the dollar a day raise. Mr. Yager, the former manager, obstinately refused during his four-year regime to even allow cost in handling hospital patients coming under the jurisdiction of the Fund.

PERIODIC EXAMINATION CAMPAIGN

On April 1 this organization, in conjunction with the Idaho State Medical Association, launched a campaign for "periodic health examinations." An innovation in distributing circulars was inaugurated by securing the members' cooperation to insert circulars in statements, bills or letters. Some of our members have secured the cooperation of their druggists in distributing these circulars. Twenty thousand circulars were distributed the first twenty-five days and orders are being received at the rate of over a thousand a day.

Extensive preparations are being completed to carry this periodic health examination work to the schools through P. T. A. and State Teachers' Association. Some of the local societies are planning professional and social meetings with the dentists and druggists to further the work.

LEAGUE CONVENTION

The Idaho Public Health League will hold its annual meeting at Twin Falls, August 29-31, 1927. These are the dates of the Idaho state medical meeting. It is believed this will be one of the biggest meetings yet held by the two organizations, for the reason that it is centrally located and an excellent program has been provided.

THREE DOCTORS APPOINTED

Governor Baldridge has announced the appointments of the Superintendent at North Idaho Sanitarium and the Idaho Colony. Dr. John I. McKelway has been appointed Superintendent of the Orofino Hospital. Dr. D'Orr Poynter has been appointed head of the Idaho Colony. The last legislature changed the name of the Feeble Minded Sanitarium at Nampa to the Idaho State School and Colony.

The trustees of the Blackfoot Sanitarium have announced the appointment of Dr. F. W. Mitchell as Superintendent.

CONDUCT DISORDERS OF CHILDREN. Ira S. Wile, New York (Journal A. M. A., April 16, 1927), discusses the standards of conduct, the biologic and psychologic aspects of conduct, and the social stimuli producing conduct disorders. He says that the conduct disorders of children may be occasional, periodic or habitual. Their antisocial characteristics vary with time, place and circumstance as well as with the age of the children. The process of character formation is a by-product of living, and conduct is one phase of the expression of its development. Whether approaching the problems of conduct as a general practitioner, a pediatrician or a psychiatrist, one is confronted by the fact that a human being is being treated and that his problems arise from the fact that he is human as well as from the fact that he is a physical being. Conduct disorders are nonconformities of individuals inadequately adjusted in their environment. The problem is to seek the cause of the difficulty. Children are only parts of their own problems. It is wise to think of the degree to which society functions in creating the difficulties of individuals.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

Modern Medicine. Edited by Sir William Osler, Bart., M. D., F. R. S. Third Edition, Thoroughly Revised. Reedited by Thomas McCrae, M. D., Professor of Medicine, Jefferson Medical College, etc., etc., Assisted by Elmer H. Funk, M. D., Assistant Professor Jefferson Medical College. Vol. IV. Diseases of The Respiratory and Circulatory Systems. Illustrated. Cloth, 1011 pp. $9.00. Lea & Febiger, Philadelphia, 1927.

Osler's system of medicine is so well known as to require no introduction. It has established itself as one of the great authoritative and standard works on medicine. And yet in a treatise written by so many authors there must be considerable variation in the excellence of their output and a certain amount of repetition and conflict in opinion.

Thus, under the head of myocarditis Babcock regards latent myocarditis as the chief cause of sudden and unexpected death in middle aged or elderly, and often apparently robust men. He looks upon the degenerative changes in the heart muscle as the etiology, plus some extra strain put upon the heart, as strong emotion, a hearty meal, or over exertion and consequent increase of blood pressure. The existence of coronary disease is ignored, although coronary obstruction is probably the immediate cause of almost all such sudden cardiac deaths. In angina pectoris Babcock also affirms that the "predominant etiology, barring coronary thrombosis, is sclerosis of the ascending limb of the aorta." Hoover, in his admirable article on angina pectoris in a later part of the volume, voices more nearly the feelings of experienced practitioners when he affirms "disease of the coronary artery has always been found in every case that was subjected to a thorough postmortem examination." He also makes some very interesting observations on blood pressure and finds that there may be a great difference of pressure in the arm and leg, in one case the systolic pressure being 250 in the arm and 150 in the leg. He believes that the brachial pressure is, sometimes, purely a matter of increased local arterial hypertonus and that the two pressures should be found equal in leg and arm before we may consider the pressure as being general in the arteries.

There is a surprisingly long and elaborate chapter by Maude E. Abbott on congenital heart disease. Surprising because of the very detailed description of these rare and often diagnostic impossibilities antemortem. The monograph is of great value, however, for reference. In it is described the heart with a single ventricle, or three chambered heart (cor biatriatrum triloculare). This is a good example of a heart, in which the admixture of venous and arterial blood produces no alarming disturbances in the circulation and the condition is not incompatible with comparatively long life. A patient of the kind died at the King County Hospital in early adult life some years ago. Diagnosis is attempted in many congenital lesions in this article but, if the diagnostician wishes to retain a reputation for accuracy, he had better refrain from giving an opinion in these cases. At least this is the conclusion arrived at by the reviewer.

There is an admirable account of aortic stenosis by Osler who emphasizes the extreme old age that may be attained by sufferers from the lesion. He ignores syphilis as a cause which is mistakenly given by some writers of note, even by so great an authority as Mackenzie. A most excellent chapter on arrhythmias is to be found by Sir Thomas Lewis, than whom there is no higher authority today. The description and explanations of this intricate subject are wonderfully simple. Lewis believes that sudden and unexpected deaths in heart patients are often due to fibrillation of the ventricle, or delirium cordis, which so often occurs in animals, after poisoning, as from chloroform. Of course no evidence of this can be found postmortem.

Space does not permit us to review the section on respiratory diseases but the work as a whole is one of the most notable standard reference books in the English language. Winslow.

The Diseases of Infants and Children. By J. P. Crozer Griffith, M.D., Ph.D., Professor of Pediatrics in the Graduate School of Medicine of the University of Pennsylvania, and A. Graeme Mitchell, M.D., Professor of Pediatrics, College of Medicine, University of Cincinnati. Second Edition, Reset. Two octavo volumes totaling 1715 pages with 461 illustrations, including 20 plates in colors. Philadelphia and London: W. B. Saunders Company, 1927. Cloth, $20.00 net.

There is an excellent chapter on juvenile lues and tuberculosis, these being well covered in a brief, although complete manner. All the serum therapy and other advances in their diagnosis and treatment have been included in the discussion of contagious diseases. The authors are advocates of the percentage system in the artificial feeding of infants, and employ large numbers of mathematical formulae and tables for the calculation of the proper percentage relations of the different food elements. It is true that this is an excellent method, but it will not appeal to the general practitioner as a reference for his infant feeding problems.

In taking up the diseases by systems, the opening pages of the chapter are devoted to a discussion of the outstanding symptom with a short differential diagnosis, as of cough in respiratory diseases. It is recommended that everyone read the chapter on cardiac disease, particularly the part devoted to congenital heart disease. The classification of the diseases of the gastrointestinal tract in infancy would seem to be somewhat confusing, as they briefly review Finkelstein's classification and then proceed with the acute and chronic disorders of the various parts of this tract.

An excellent feature of this work, as a result of the careful review of the literature by the authors, is the number of references at the bottom of each page. This makes it an ideal work of reference for a brief discussion of any condition, and at the same time easily to obtain the references for more extensive reading on the subject. Throughout the work are numerous helpful tables and charts, and many excellent illustrations and color plates.

Taken in all, the work is a valuable contribution to pediatric texts, particularly for the physician who has not the time to peruse the extensive monographs in the larger works. REMBE.

OBSTETRICS FOR NURSES. By Joseph B. DeLee, M. D., Professor of Obstetrics at the Northwestern University Medical School; Obstetrician to the Chicago Lying-In Hospital and Dispensary. New (8th) Edition, Revised. 12 mo. of 635 pages, with 266 illustrations. Philadelphia and London: W. B. Saunders Company. 1927, Cloth, $3.00 net.

There must be a demand for a book which within a few years is published in its eighth edition. The author states that more than half of the babies are yet born in the home. Therefore, home obstetrics has to be taught as well as that of the hospital. Although there is no difference in principles, the details vary. These have been emphasized in the instructions given to nurses in this volume. Part I, dealing with the anatomy and physiology of the reproductive system, describes conditions and changes of the mother during pregnancy and the puerperium, as well as physical conditions in the newborn infant. The chapter on hygiene of pregnancy offers many useful and valuable suggestions. Much detail is given in Part II with reference to nursing during labor and the puerperium. Since the successful outcome of the latter condition is dependent largely on the attendance of the nurse, these chapters can be perused with profit. In Part III many possible complications that may occur during the whole period of childbirth are discussed, much of which might be read with profit by the physician as well as the nurse. Since statistics show that one woman dies of every two hundred who become pregnant, and that twenty-three thousand die every year in this country from the immediate and subsequent affects of childbirth, the value of a book of this kind is self-evident.

SHELL SHOCK AND ITS AFTERMATH. By Norman Fenton, Ph.D. Associate Professor of Psychology, Ohio University, at Base Hospital 117, A. E. F., etc. With an Introduction by Thomas W. Salmon, M.D. Formerly Senior Consultant in Neuropsychiatry, A. E. F. Cloth 174 pp. $3.00. The C. V. Mosby Co., St. Louis, 1926.

This is a subject of large interest not only in relation to war, but regarding the neuroses and psychoses following industrial accidents. Shell shock is, of course, not literally what its name suggests, but a condition of functional nervous disease of various types, occurring in soldiers during the Great War. Not only was shell shock more common in those at the front but not in action, but it was still more frequent among the men in camps at home. It appears to have more often attacked officers than men, and to have been more frequently observed in those of the engineer, signal, artillery, tank and medical corps, than in the infantry. Horror, fear and anxiety seem to be the chief causative factors. Those who had no way to express their emotions through action suffered more than those in actual combat.

The men in the trenches in stationary fighting succumbed more readily than those on the march and in victorious fighting. Shell shock was rare among the wounded and captured. Fenton finds that congenital or acquired neurotic tendencies did not especially account for the incidents of shell shock. It occurred among all physical types with almost equal frequency. Among the regulars as often as in the volunteers, and in the volunteers about as frequently as among the drafted men.

The fact that certain physical types had no relation to shell shock, according to Fenton, is a surprise to the reviewer, because those who suffered from effort syndrome or neurocirculatory asthenia, a form of neurosis or shell shock, were usually of the enteroptotic build. These subjects exhibited the characteristics ascribed to them by Stiller, who first described enteroptosis under the appropriate title of asthenia congenitalis universalis. The reviewer had thousands of such men under his supervision and they would have been easy to diagnose at sight and should have been excluded from military service, according to his experience.

Fenton finds that shell shock was much less common among farmers than among soldiers having any other previous occupation. Also he affirms that an outdoor life on the land is by far the best occupation for the rehabilitation of the soldier. After the armistice some forty per cent of shell shocked men were unfitted for self support and, even after six years or more, many are still so unfit. The very fact of soldiers being suddenly demobilized and thrown on their own resources to earn a living brought on a return of the neurosis in the case of many suffering from anxiety and privations in civil life.

Fenton has made a study of a large group of the shell shocked in hospitals in France and again after several years. He has found no facts altogether to account for the incidence of war neurosis in some and not in others. The condition is not imaginary and causes great suffering. The methods of rehabilitation by the Government are described, consisting largely of occupational exercises for the hand and brain of useful and remunerative kinds. These methods may be applied to neurotic sufferers from industrial accidents. WINSLOW.

PHYSICIANS OF THE MAYO CLINIC AND MAYO FOUNDATION. A series of 635 Biographical Sketches with 611 portraits and including complete and accurate data concerning the professional life of each physician prior to January 1, 1926. Octavo Volume of 578 pages. Philadelphia and London: W. B. Saunders Company, 1927. Cloth, $7.00.

This book comprises a complete roster of those physicians who, prior to January 1, 1926, have had an official connection with the Mayo Clinic or the Mayo Foundation for a period of one year or more. A brief biographical sketch brought up to the above date accompanies the portrait of each physician, and this sketch is concluded by a bibliography or liter-

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ary output of each member. That of Dr. William J. Mayo surpasses them all with three hundred and fifteen contributions, occupying eleven pages, with the titles of the same. Appended to the main text are two indices; one of the institutions conferring the degree of Doctor of Medicine, the other of the names of these 635 physicians arranged geographically. The book is one of ready reference, and subsequent editions will keep it properly up to date.

GUNBY.

THE FIFTH AVENUE HOSPITAL CLINICS. First Series, Based on the Material From the Semimonthly Staff Meetings, 1925. Published by the Editorial Board. 336 pp. Illustrated. $5.00. Paul B. Hoeber, Inc., New York City. 1927.

This volume contains papers on twenty-six topics, arranged chronologically in the order in which they were presented at the various staff meetings at this hospital. They cover a great variety of topics, dealing with internal medicine, surgery, gynecology, pediatrics and others. They represent work by a large number of authors who are leading practitioners in New York City. For the most part, a given subject is covered by one paper, but there are several symposiums, as that on thyroid gland disease discussed in papers by six authors. The volume presents interesting material covering many important diseases.

TIGER TRAILS IN SOUTHERN ASIA. By Richard L. Sutton, M. D., Sc. D., LL.D., F.R.S. (Edin.) Professor of Dermatology, University of Kansas, etc. With 115 Original Illustrations. 207 pp. $2.25. The C. V. Mosby Company, St. Louis. 1926.

This is a recital of the doctor's experiences in hunting tigers, leopards and elephants and other large game in Indo-China, Burmah and India. Incidentally, he describes personal interviews with cobras, pythons and various other noxious reptils. The book is written in an interesting and jocular vein, showing that the author got a lot of fun out of his experiences, all of which he presents in an attractive form. He seems not to entertain great respect for the tiger from a fighting standpoint. Conrtray to the general belief that this is the most ferocious of wild animals, he appears commonly to be an overgrown cowardly cat, who flees from man unless forced to fight. The author recites interesting incidents regarding strange and unusual peoples with whom he came in contact. The closing chapters deal with the outfit one needs for such an expedition, detailing the necessary drug equipment, first-aid kit of surgical supplies, as well as presenting a discussion of the most desirable fire arms and the varieties of necessary ammunition. Any reader contemplating a wild animal hunt in Southern Asia could read this volume with profit.

IMPROVED UREHTRAL SYRINGE

F. A. VAN BUREN, M.D., SAN ANTONIO, TEXAS

Some years ago I devised a long, slender barrel syringe (fig. 1) for treatment of the female urethra. This instrument became very popular and was useful to those doing gynecology and urology. It may be used also as a uterine syringe.

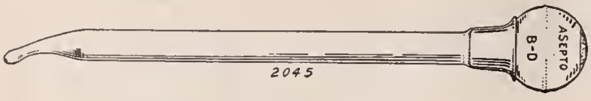

Fig. 1. Syringe with long slender barrel.

Recently I devised another model, for the female urethra and bladder only. It has a capacity of about 30 c.c. of fluid, a longer curved conical tip reaching the bladder and eccentrically placed so as not to interfere with a vaginal speculum if used. Slight pressure prevents the return of the liquid (fig. 2).

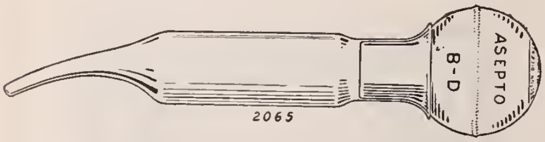

Fig. 2. Syringe for female urethra and bladder.

These syringes are always in working order; they have the nonfilling bulb, and are easily cleaned and sterilized. They are manufactured through the courtesy of Becton Dickinson & Co., makers of the "Asepto" line.

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ORIGINAL CONTRIBUTIONS

SOME ASPECTS OF HYPERTENSION*

G. F. Strong, M.D.
VANCOUVER, B.C.

Hypertension receives a very great deal of consideration in the medical literature and rightly so, because it is a common and often very troublesome symptom. The current journals abound with articles dealing with the subject from every conceivable angle, theories as to cause, statistics as to incidence, innumerable methods of treatment and, in addition, countless reviews of the whole subject. This enormous literature only reflects the general interest in hyertension and probably also indicates how little we actually know about it.

Rather than attempt briefly to review the whole subject, I have chosen to discuss certain aspects that seemed to me worth emphasizing. These are (1) the relative incidence, (2) certain recent observations on the pathogenesis of hypertension and (3) recent methods of treatment.

INCIDENCE

Figures to show the incidence of hypertension in the population as a whole are not available so far as I know. They are difficult, if not impossible, to obtain, although, as we are all well aware, it is a common clinical finding.

Several excellent statistical studies have been made, notably those by Alvarez,[1] Diehl and Sutherland[2] and Dublin and his associates,[3] which have shown the incidence of pressure over 140 to be from 7 to 22 per cent in the groups of men studied. Valuable as the information contained in these reports may be, it is obvious that these are studies of selected groups. It cannot be supposed that figures obtained from college freshmen and insurance policy holders would present a fair sample of the findings in the population as a whole, in which the incidence of hypertension would be very much greater. The evidence thus presented would, however, indicate that hypertension occurs with sufficient frequency to merit all the consideration we can give it. The incidence in the population as a whole is probably over 20 per cent.

One thing brought out very clearly by the above mentioned studies is the necessity for a good deal of care in the conduct of such routine examinations to avoid obtaining an erroneously high figure for the incidence of an elevated resting blood pressure. Diehl and Sutherland's[2] work covers a three year period. In the first year no particular precaution was observed to eliminate the factor of excitement and over 16 per cent of their subjects (freshmen entering the University of Minnesota) were found to have a systolic blood pressure over 140. In the next two years, if a blood pressure over 140 was found, the subject was allowed to rest five to ten minutes when a second reading was taken. By this precaution, the finding of blood pressure over 140 was reduced to 9 per cent. This is a fact well worth keeping in mind in clinical work, where the first reading taken on a patient may be raised considerably because of excitement.

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* Read before Spokane County Medical Society, Spokane, Wash., March 10, 1927.

PATHOGENESIS

The possible physiologic mechanisms by which an increased blood pressure is brought about are (1) a decrease in the peripheral vascular bed, (2) an increase in cardiac output, (3) increase in total blood volume and (4) an increase in blood viscosity. Only the first of these is of interest in connection with the common clinical forms of high blood pressure, especially that commonest form, the so-called essential hypertension.

Decrease in the peripheral vascular bed, that is, the increase in peripheral resistance, must be fairly general to produce any appreciable elevation of blood pressure and must be persistent to maintain that pressure. Systemic blood pressure is controlled by the vasomotor center and the height of that pressure is regulated by this center according to its own needs. Local arterial spasm or disease of the arteries of one organ or set of organs is not sufficient to cause hypertension, unless such circulatory disturbance involves that region of the brain stem in which the vasomotor center is located. The decrease of the peripheral field is brought about at first by an increased tone of the systemic arterioles. Later, organic changes in these arterioles probably necessitate the maintenance of this elevated pressure. Hypertension is not produced as a result of increased resistance due to generalized arterial disease alone. In other words, it is not a result of simple obstruction to the mechanical flow of blood through the systemic arteries. Both the increased blood pressure and the disease of the peripheral vessels are probably due to the same etiologic factor.

Before proceeding, I should like to emphasize the distinction between the terms arteriosclerosis and arteriolosclerosis. Arteriosclerosis is the common arterial thickening and hardening, involving the palpable peripheral vessels, as the radial, brachial and temporal and other systemic arteries of similar or larger caliber. It is often a generalized process. Arteriolosclerosis, on the other hand, is a disease of the arterioles, the arteries of microscopic size, as for example, those in the retina. It is rarely, if ever, a generalized condition. The two processes may be associated or may occur independently. It is the arteriolar type of disease that is of importance in connection with hypertension.

It has long been known that changes in blood supply to the brain have an effect on systemic blood pressure, but it has remained for Anrep and Starling[4] to establish as a physiologic law that "changes in the blood pressure in the vasomotor center produce the reverse changes in the blood pressure in the rest of the body." They found these changes to be so regular in their occurrence as to be regarded as one of the fundamental laws of the vasomotor enervation. Previous work in this connection has been carried out in an animal with an intact circulation. The evidence revealed has been open to question as to possible interference to the vasomotor response from a number of different sources.

Their work was accomplished on dogs by means of crossed circulation experiments, in which the brain, head, neck, and right foreleg were supplied with a circulation from a heart-lung preparation entirely under the control of the experimenters. The trunk, left foreleg and hind legs were supplied by the animal's own circulation. Due precautions were taken to prevent any gross interchange of blood, as it was their aim to have only a nervous connection between the two circulations. In this way all interference from possible chemical stimuli arising in the systemic circulation as a result of circulatory disturbances was removed. Their experiments afford the opportunity of dissociating vasomotor effects produced in response to stimuli affecting the vasomotor center directly from those which are of reflex origin. A rise or fall in the systemic blood pressure produced by the reverse change in the blood pressure in the brain was shown not to be of a transitory nature, but to last for a long time, or until a further change occurred in the pressure in the brain. Not only abrupt, but gradual changes in the pressure in the brain circulation cause these reverse changes in systemic pressure and they produce plates showing the beautifully adjusted antagonism of the two pressures. These changes were not affected by section of both vagi. They were shown to be based exclusively on a central mechanism, and were vasomotor in origin. No attempt is made by this work to establish why these changes in blood flow through the vasomotor center should produce changes in the systemic pressure.

These experimental results have led Starling[5] in a more recent discussion on hypertension before the British Medical Association, to make the assertion that the "causation of hyperpiesia must first be sought in the vasomotor center." He has pointed out that numerous lesions, both vascular and cellular, might reduce the blood supply to this particularly sensitive region and so bring about a compensatory rise in systemic blood pressure. The vascular disturbance causing a decrease in the blood supply to the vasomotor center might be (1) gross lesions of the arterial trunks to that region as in certain types of cerebral arteriosclerosis, (2) claudication of the vessels as in essential hypertension, (3) toxic influence on the capillaries, as in such conditions as uremia and eclampsia. Actual derangement of the function of the nerve cells of this region might be produced by various "toxic" factors, as the retention products in nephritis, which might lead to a demand for an increased blood flow. Any condition tending to reduce the blood flow or necessitating an increased blood supply to the region of the vasomotor center would produce a clinical hypertension.

Investigation of one phase of the vascular type of disturbance of the vasomotor center has been undertaken by Bordley and Baker.[6] Their work is, I believe, of considerable interest and importance, since it furnishes evidence that the results of the experiments of Anrep and Starling possibly apply to clinical hypertension. Basing their studies on the work of these English physiologists, Bordley and Baker have endeavored to discover the possible pathologic significance of these physiologic findings. Their series of cases is as yet too small to allow of any very general conclusions, but the results are so well defined that the evidence may be considered of great importance. They selected from the pathologic laboratory of the Johns Hopkins Univesity twenty-four cases presenting about the same degree of generalized arteriosclerosis, in which the brain had been preserved and in which complete clinical records were available. Fourteen of these cases were found to have had a persistent hypertension with a systolic pressure over 150, usually much higher, while the other ten showed normal, or only occasionally elevated blood pressures.

In all these cases, a transverse section was cut from the medulla and carefully studied for evidence of arteriolar disease. In the fourteen cases with high blood pressure, evidence of arteriolosclerosis was found in every one, whereas the ten cases with normal blood pressure failed to show any sign of arterial involvement. The arterial change found was not always of the same kind. In some cases it involved the intima, in others the media. It was never a change due to hypertrophy but rather a degenerative type of lesion. These findings suggest a definite relationship, in the cases studied, between disease of the arterioles of the medulla, with resulting increased resistance to blood flow and clinical hypertension. This is not by any means an explanation of the cause of high blood pressure, but it may be an anatomic explanation for its occurrence. It may be that, when these vascular changes resulting from unknown factors involve the vessels of the brain stem, high blood pressure ensues.

Further evidence as to the relationship between small artery disease and high blood pressure is to be found in the studies of Fishberg.[7] He studied seventy-two cases of essential hypertension and found lesions of the terminal arterioles in every case. The various organs showed a different degree of involvement. The kidneys presented arteriolar disease in 100 per cent of cases, the spleen in 66 per cent, the pancreas in 50 per cent, the liver in 33 per cent and the brain in 20 per cent. The figure for involvement of the arterioles of the brain might have been higher, had the medulla been selected for special study as in Bordley and Baker's work. It may be that this medullary arteriolosclerosis is only a part of a generalized vascular involvement, although as Bordley and Baker point out, this type of arteriolar disease is rarely, if ever, a generalized process. Indeed, Fishberg's findings suggest that very thing. He did not find a true generalized arteriolosclerosis for, although the small vessels of the viscera were involved, the great majority of arterioles of the body, as well as those of the skin and voluntary muscles, were free from disease. The process was not a generalized but rather a localized one.

Further evidence of relationship between arteriolar disease and hypertension is to be found in the investigation of O'Hara and Walker.[8] They studied one hundred cases of generalized arteriosclerosis, fifty of whom had hypertension, the remainder having normal pressures. They found that all the hypertension patients in this group had evidence of definite retinal arteriolosclerosis, whereas the others had nearly normal retinal vessels. As they point out, Moore[9] has shown definitely that the condition of the retinal arteries is a close guide to the condition of the cerebral vessels. Their findings suggest a definite relation between arteriolar disease in certain locations, as the retina and by inference therefrom involvement of the brain and hypertension. It may be, therefore, that disease of retinal arterioles is always associated with disease of cerebral arterioles or at least of those of the brain stem and when, as the Johns Hopkins workers suggest, this condition affects these arterioles in the region of the vasomotor center, clinical hypertension results.

This present work by Bordley and Baker is concerned with only one type of hypertensive patient, i.e., the patient with organic disease of the arterioles of the medulla. Further investigation is necessary concerning the pathology of the medulla and its vessels in a larger series of high blood pressure patients. There seems a far wider application of the results obtained by Anrep and Starling, and Bordley and Baker in the possibility that all cases of hypertension may result from a disturbance of the vasomotor center. This disturbance is not a result of simple oxygen deficiency, for in that case one would expect an elevated blood pressure in cases of severe anemia. Just what the nature of this disturbance of the vasomotor center is, can only be a matter of conjecture at the present. It may be a derangement of the metabolism of the nerve cell, brought about by (1) insufficient blood supply (as in Bordley and Baker's cases), (2) the action of toxins as in nephritic, eclamptic, and similar states and (3) the action of various endocrine products, as in conditions of increased adrenal activity, or as in disturbances due to menopause.

High blood pressure, it is generally agreed, is a symptom and as such should be subject to the laws that govern all symptoms. Mackenzie has emphasized the fact that all symptoms are due to disturbance of some normal reflex mechanism. The reflex involved in the case of hypertension is that governing the relation between blood flow through the vasomotor center and the systemic blood pressure. It is now definitely established by the work of Anrep and Starling that decreased blood flow through the medulla leads to increased systemic pressure which increase is compensatory to the extent that it represents an attempt by the vasomotor center to augment and maintain the rate of blood flow through the brain. In these cases showing sclerosis of the medullary arterioles, the reason for the decrease in blood flow through the medulla is obvious.

Other conditions might conceivably occur in which an increased blood flow through the medulla would be necessary. Disturbance or derangement of the normal metabolism of the nerve cells in this region would probably result in the same demand for an increased blood flow, with the consequent rise of systemic pressure. Such derangement of the cellular metabolism might be produced by toxins, endocrine products, or other intrinsic factors, not as yet determined. Such derangement of cellular metabolism leading to increased blood flow might not, in fact almost certainly would not be capable of demonstration under the microscope. We know that more and more physiologic functions are coming to be explained on the basis of cellular metabolism, so that it is quite conceivable that derangements of the metabolism of the nerve cells in the medulla might be capable of producing widespread effect through the mechanism demonstrated by Anrep and Starling. Numerous experiments showing the pressor effect of various substances (e.g., adrenalin and guanidin) on decerebrate animals need not be taken as evidence that the central, vasomotor control of blood pressure of the intact animal is ever lost or diminished. These and other substances have no doubt a peripheral vasoconstrictor effect which is effective even when the medullary influence is removed.

A decreased blood flow or, what is similar in result, a demand for an increased blood flow in the brain stem would then be the physiologic mechanism for the production of hypertension. It is obviously desirable to find the underlying cause for any symptom and, if high blood pressure can be shown to be always the result of an attempt on the part of the nerve cells of the vasomotor center to obtain an increased blood supply, a definite advance will have been made in our study of a common and often distressing symptom. There is nothing in this to suggest an actual cause for the high blood pressure. It is merely a possible explanation of its pathogenesis.

TREATMENT

Hypertension as a symptom can be considered in general terms, when we are discussing its incidence or the mode of its production, but when we come to consider treatment we must classify these cases as to their cause. Adequate treatment must rest upon a recognition of the cause and its removal when it can be determined.

Fishberg[7] includes as essential hypertension all cases of chronic high blood pressure which neither clinically nor anatomically can be demonstrated to have evolved from a preceding inflammatory disease of the kidneys. There are, it is true, a few other conditions in which chronic hypertension occurs, but for practical purposes in the consideration of these chronic cases the nephritic and essential types will include the great majority. Hypertension occurs as an acute condition in toxemias of pregnancy, eclampsia, effects of some poisons, and in certain "toxic" states. These acute cases one obviously treats by removing the cause. Of the chronic cases, those due to a nephritis require the treatment necessary for that nephritis and, in addition, should be given such treatment for high blood pressure as the circumstances require.

The treatment of that large group of patients designated as essential hypertension has been given a great deal of consideration. Some of these are frequently the victims of overtreatment. Especially is this true of those found to have a high blood pressure in the course of a routine medical examination. They may find themselves subjected to all kinds of regulations as to habits and diet. They are treated by a variety of medicines and elaborate electrotherapy or physiotherapy, all for a condition that never gives them the least symptom of ill health. In most of these cases of chronic hypertension no effort should be made to lower the blood pressure. The rise of pressure has usually been gradual over a number of years and has occurred as a result of some underlying cause, e.g., arteriolosclerosis of the medulla. The sudden lowering of this tension is usually productive of ill results and even the gradual reduction is of no benefit and cannot be maintained except at the risk of depleting the patient.

Our efforts should be directed rather to preventing further rise and particularly sudden changes in pressure, and to protecting these patients against those accidents that hypertension so often produces. The effects of continued hypertension are shown in the heart, the cerebral vessels and the kidney, and it is to the protection of these organs that our treatment must be directed. Hypertensive heart disease is a common finding in adults of middle age and these patients require treatment of their hearts, including rest, and digitalis, if necessary.

Reducing the "stress and strain" of life is important in all these patients and, though easy to talk about, is difficult to accomplish. It is easy to tell the man who works hard "to make both ends meet" in the face of numerous difficulties, to take things easy and stop worrying but it is another matter to actually accomplish this change. There are no doubt corrections we can make in habits and in diet that benefit these people.

The much dreaded protein of a few years ago is less seriously considered at present and I believe that more important than protein restriction is the general reduction in diet. These patients frequently have hearty appetites and eat large quantities of food. To reduce their intake gives some of them very definite benefit. As an aid to reducing this intake I have found a salt-free diet of value not from this factor itself but because the salt-free food is less palatable. Reduced activities, lessened worry and lowered food intake are, I believe, essential factors in the treatment of all cases of high blood pressure.

The announcement a few years ago of the finding of a blood pressure reducing substance in liver extract led to great expectations as to its clinical value in the treatment of these cases. Recent evidence would indicate that the present liver extract, at least, is of little, if any, value. Christian[10] has given it a trial at the Peter Bent Brigham Hospital and has given up its use as of no value. It is possible that there may yet be evolved some potent liver extract, though we must keep in mind the fact that it is not the reduction of the blood pressure alone that should concern us in our treatment.

A number of patients with high blood pressure complain of various nervous symptoms, such as fullness in the head, ringing or buzzing in the ears, dizziness, insomnia or palpitation. These usually are considerably benefited by luminal. Luminal is the trade name for phenobarbital or, more exactly phenyl-ethyl-barbituric acid. It is a modification of veronal which is di-ethyl barbituric acid. It has been reported by Gruber[11] as being of considerable value for its effect on lowering high blood pressures. The dose necessary to produce results varies considerably. Some patients seem to feel better on a very small dose, as one-fourth grain, four times a day, while others require a full dose of one and one-half grains given three times. I have not found any permanent lowering of the blood pressure in a number of cases but I have found a very decided subjective improvement following the use of luminal. It relieves the nervous symptoms, quiets the patient, makes him sleep better and it may, in addition, slightly reduce the blood pressure.

The old time honored stand-bys, potassium and sodium iodide, should probably be mentioned. In my experience neither is of value in true essential hypertension except as a placebo. In a few cases they may do harm by activating a quiescent thyroid condition. Sodium bromide is of value in some cases of hypertension, especially in those complicated by symptoms of restlessness, insomnia, etc. Other drugs commonly employed in the treatment of hypertension are the nitrites (sodium nitrite, nitroglycerin, or ethyl tetra nitrate), chloral hydrate, benzyl benzoate, and veratrum or aconite. The nitrites should not, in my opinion, be used in the ordinary treatment of essential hypertension but should be reserved for those conditions in which some definite indication for the immediate reduction of blood pressure exists, as in angina pectoris and threatened apoplexy. The same may be said of venesection which may be of value in certain emergencies but which must be used with care in patients with extensive arteriosclerosis. Further medicinal treatment of these high blood pressure patients must be entirely symptomatic.

The use of electricity, as in the form of auto condensation, has been favorably reported, but in my experience, it is of no particular value. Some patients may show slightly lowered pressures while undergoing treatment but this is not productive of any lasting benefit. This only emphasizes again the fact that our treatment must not be directed alone to lowering the existing blood pressure but to removing the cause where possible and to preventing any further rise.

CONCLUSIONS

1. Figures showing even the approximate incidence of hypertension in the population as a whole are not available, but from what evidence can be found it is safe to conclude that it occurs in considerably over 20 per cent of adults.

2. The work of Anrep and Starling in establishing as a physiologic law that changes in blood pressure in the vasomotor center produce the reverse changes in the blood pressure in the rest of the body, lead to the possible conclusion that all hypertension may be a result of changes in rate of blood flow through the vasomotor center, which change may be produced by various lesions both vascular and cellular.

3. The present form of liver extract appears to be of no clinical value. Luminal in proper doses is a drug of considerable value in some cases of essential hypertension.

BIBLIOGRAPHY

1. Alvarez, W. C., Wulzen, R., and Mahoney, L. J.: Arch. Int. Med., 32:17, 1923.

2. Diehl, H. S., and Sutherland, K. H.: Arch. Int. Med., 36:151, 1925.

3. Dublin, L. I., Fish, E. L., and Kopf, E. W.: Am. J. Med. Sci., 170:576, 1925.

4. Anrep and Starling, E. H.: Proc. Roy. Soc., 1925, 97B:463, 1925.

5. Starling, E. H.: Brit. Med. Jour., II, p. 1163, 1925.

6. Bordley, J., and Baker, B. M.: Bull. Johns Hopkins Hosp., 39:229, 1926.

7. Fishberg, A. M.: Arch. Int. Med., 35:650, 1925.

8. O'Hare and Walker: Arch. Int. Med., 33:343, 1924.

9. Moore, F. R.: Quart. Jour. Med., 7:10, p. 29, 1916.

10. Christian: Personal communication, Feb., 1927.

11. Grube, et al: Arch. Int. Med., 36:366, 1925.

THE USE OF INSULIN

IN THE TREATMENT OF CERTAIN NONDIABETIC CONDITIONS OF INFANCY AND CHILDHOOD*

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Insulin has been used in a number of nondiabetic conditions during the last two years, both empirically and scientifically. Pitfield[1] suggests its use in the treatment of malnourished infants. In a recent communication, Marriott[2] concludes that nutrition in malnourished infants may be rapidly improved by the intravenous injections of glucose and insulin. This is followed by the work of Barbour[3] with forty malnourished children in which he reports favorable gain in nutrition in thirty-eight. No blood sugar determinations were made in these trials but the benefit was thought to be due in part to the use of insulin.

In 1925 a report on the use of insulin in malnourished infants was made by Tisdall, Brown, Drake and Cody of Toronto.[4] Nine infants were treated with intravenous injections of insulin and 20 per cent glucose solution; seven with insulin and subcutaneous injections of 15 per cent glucose solution; two with insulin and 10 per cent glucose solution subcutaneously; and six infants with insulin in conjunction with feeding. In each case the insulin was given preceding the sugar. Blood sugar determinations were made in all. Among other conclusions these men call attention, (1) to the fact that malnourished infants can metabolize sugar more rapidly than normal infants. This would appear to indicate these children were not suffering from lack of insulin production; (2) that blood sugar determinations vary greatly in infants, making the administration not without danger; (3) that other factors of feeding may be influential in improvement of nutrition.

Greer[5] reports the use of glucose and insulin in treating two cases of acute cyclic vomiting in children in which he thinks the marked beneficial results were due to the use of insulin with glucose. He gave the insulin in both cases forty-five minutes after the intravenous injection of glucose solution. In one case the blood sugar dropped from 0.22 to 0.13 per cent following the treatment. In the other case the blood sugar was not determined. Priesel and Wagner[6] recommend for treatment of alimentary intoxication with exsiccation in infants, the use of intravenous injections of 280 to 300 c.c. of a 10 per cent solution of glucose, preceded by the injection of one unit of insulin for each five grams of sugar. Meyer and Bamberg[7] report the use of insulin with glucose in the preparation for an operation for appendicitis, a child who gave a history of frequent attacks of recurrent vomiting with acidosis. The use of insulin with glucose was continued in the postoperative treatment.

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There are some conditions in which we may suppose there is pancreatic insufficiency and others in which there is lessened carbohydrate metabolism. In these the use and rapid oxidation of carbohydrates should be beneficial. We have observed the use of insulin in clinics in Vienna and Berlin; and have used it in a number of our own cases. It is an adjunct to treatment, either with glucose injections or in conjunction with feeding in the following acute conditions: (1) alimentary intoxication with exsiccation in infants; (2) severe states of acidosis; (3) in the course of acute infection with dehydration.

1. In acute alimentary intoxication there is often an inability to properly metabolize sugar and there is frequently a glycosuria. Insulin and glucose injections may be added to the other measures used or insulin given with a high carbohydrate feeding. The following method we have observed and applied in two of our own cases. First, a so-called starvation period of two to ten hours is carried out, during which only a weak solution of tea and glucose is given by mouth. At this time insulin is given followed in forty-five minutes by the injection of 100 to 200 c.c. of 10 per cent glucose solution either subcutaneously or intravenously. The dosage of insulin recommended is six units to 180 c.c. of a 10 per cent glucose solution. Second, a weak formula is begun and the insulin and glucose continued twice daily. Later the insulin may be given in conjunction with the feeding. There is a question whether there is a temporary loss of decrease of sugar.

2. As regards metabolism in acidosis, there is usually no great difficulty in combatting the condition. Occasionally we have a grave case in which we feel that insulin used with glucose injections may insure rapid and more complete sugar oxidation.

Case 1. Boy, four years, diagnosed acidosis. His younger sister had a mild attack of acidosis complicating a pharyngeal infection, from which she promptly recovered when given liquids and glucose by mouth. The patient had a similar attack but was unable to retain anything by mouth or bowel. He had intense thirst; passed clear water by bowel and was mildly delirious. The condition continued for twenty-four hours when he was greatly dehydrated. There was no fever. The urine was scanty and contained acetone and diacetic acid. He was given 300 c.c. of glucose with 15 units of insulin subcutaneously. The solution was absorbed very slowly. He was given hot packs for stimulation and was sufficiently recovered to retain glucose by mouth in twelve hours.

3. Insulin may be of value in acute infections with great dehydration. This is demonstrated in the following case.

Case 2. A boy, aged six years, developed an acute hemorrhagic nephritis. No cause could be found except a moderate pharyngitis. After a few days he developed a persistent vomiting and severe dehydration. The condition continued for two weeks. Very little was retained by the stomach and proctocylis was not absorbed. He remained in a semiconscious condition for several days, during which he was given glucose solution with insulin intravenously on several occasions. The improvement was marked each time though only temporary. At one time he developed a respiratory failure, from which he rallied after stimulation, an injection of glucose with insulin and later a transfusion. His condition suddenly improved when one ear began to discharge. At no time was there any fever. The urine contained traces of acetone at times. The significant point is that the continued glucose injections carried him along and the insulin may have helped.

In certain chronic conditions of anorexia and general undernutrition insulin has been used with good results. These include anorexia of the type where no apparent cause can be found but a child can not be induced to take enough food to maintain normal nutrition. Insulin may be used together with high carbohydrate feeding.

In tuberculous children with marked undernutrition and with persistent lack of appetite, insulin has been used to insure a gain in weight. It is a temporary measure, but the results usually justify its use.

Case 3. Girl, aged ten years. Tuberculous hilus glands, lack of appetite. Weight, 55 pounds. She was given fifteen units of insulin before her morning and evening meals which contained a high percentage of carbohydrates. Her appetite was greatly increased after having the insulin. She gained five pounds in the first four days. Her subsequent gain was one to three pounds each week up to seventy pounds, when the insulin was discontinued.

Marked malnutrition and lack of appetite following acute infections is an indication for insulin and forced carbohydrate feeding. With a gain in weight the child is usually able to maintain his nutrition.

As an aid to the treatment of celiac disease it is a method that has apparent value.

Case 4. Celiac disease. Boy, aged 21 months, undernourished, large abdomen. Has large stools, often foamy. Occasional periods of diarrhea. There was no gain for nine months. He was given a diet of 2400 calories daily, 65 per cent carbohydrate, 10 per cent fat and 25 per cent protein. Twenty units of insulin preceded the morning and evening meals. He gained two and one-half pounds in eight days, after which his gain was slower and his weight at the end of two months was twenty-five pounds. The abdomen was still large but his general nutrition was much better and he had no recurrence of the diarrhea.

Case 5. Boy, aged 3 years. Weight, twenty-four and one-half pounds. Had no appetite and vomited if food was forced. Had constipation with periods of diarrhea. Pale, marked undernutrition, poor tissue turgor. Moderate enlargement of abdomen. He was considered to have a mild celiac disease. He was given a high protein diet, later moderate protein and morning and evening meals with high percentage of carbohydrate preceded by insulin.

He took these two meals well but no other food and developed diarrhea. The insulin was stopped for four days; then resumed once daily. This is his largest meal, but he takes food better at the others. He has gained three pounds in six weeks and is much improved. Stopping the insulin for two days resulted in a loss of appetite.

Observers seem to agree that insulin is most effective when given preceding carbohydrate injections or feeding. The preliminary period varies from one-half to one and one-half hours. The carbohydrate is always given at the first signs of hypoglycemia, i.e., shivering, perspiring or hunger.

The method of using insulin in connection with feeding is to give 10 to 15 units followed in forty-five minutes by a meal containing 70 to 80 per cent carbohydrates. The insulin is continued until normal nutrition is reached or vomiting occurs. For vomiting the dose is decreased temporarily.

From these observations we feel that insulin is of value, and offers a field for further scientific investigation.

BIBLIOGRAPHY

1. Pitfield, R. L.: N. Y. Med. J., Aug. 18, 1923.
2. Marriott, W. McK.: J. A. M. A., Aug. 23, 1924.
3. Barbour: Arch. Ped., Oct., 1924.
4. J. Can. M. Assoc., July, 1925.
5. Greer: South. M. J., June, 1925.
6. Priesel and Wagner: Klin. Med. Wchnschr., Mar. 12, 1925.
7. Meyer and Mamberg: Deut. Med. Wchnschr., July 3, 1925.

BASAL DISEASE OF THE LUNGS IN CHILDREN*

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In many respects the terms "asthma" and "rheumatism" bear a relationship one to the other, in that they were at one time used as though the symptoms they denoted were the actual disease entity. Rheumatism, of late fallen into disrepute, was formerly employed to describe almost any ache or pain in the osseomuscular system for which obvious cause could not be found. Only slowly and gradually did "rheumatism" in various parts of the body become known as an indicator of local or systemic disease, often remote from the site of pain.

In like manner the peculiar embarrassment of respiration called asthma is now accepted as a symptom only, an outward manifestation of disease or physiologic aberration within. Sometimes it is the sign of allergic phenomena, hypersensitivity to protein or pollen; sometimes the reaction to a collection of pus in a closed cavity. Again, it may be largely the result of mechanical pressure, as in cases of intrathoracic tumor, either neoplasm of the lung and mediastinum or thickened masses of tuberculous glands in the lung hilum.

In children, among the disease conditions frequently accompanied by asthmatic attacks, is one which for want of a better term we may call "basal disease." Essentially, this is a condition of childhood, characterized by harassing productive cough and frequent asthmatic attacks, and evidenced on physical examination by localized persistent moisture at one base.

This disease occurs in children of from two years of age up to the time of puberty. It is resistant to all ordinary forms of treatment. Climatic change appears to exercise but slight influence upon it, or at most produces merely a temporary remission. The children who so suffer are often of the plump and pasty type and are usually bright intellectually.

When the child is first seen, the parent's request is for treatment of "asthma" and "cough." Historically the condition began as a cold at an early age. It was followed by cough, expectoration and wheezing, which have persisted. Routine examination shows a well developed and well nourished child, whose skin and mucous membranes are pale. The nose, throat and ears may be normal or show the usual type of disease in these areas common to this age group, particularly septic tonsils and adenoids and carious teeth. The chest is well formed and covered. The heart is normal or slightly enlarged. Numerous rhonchi are present throughout the chest anteriorly and posteriorly. At one base, rarely both, there are present localized persistent coarse and medium coarse rales. There is no definite impairment of resonance nor important alteration of breath sounds. X-ray examination shows clear lung fields, slight thickening in the hilum and slightly thickened descending bronchi. The abdomen is normal. Urinalysis occasionally shows a trace of sugar. There may be a slight transient increase of eosinophils in the blood smear. Hemoglobin is slightly reduced. The white and red blood cell counts are normal. Tuberculin skin tests are either negative or show feeble reaction. Sputum examination shows only the usual mixed infection. There is no elevation of temperature.

Such a picture is common, and yet it would appear the condition is a difficult one to classify. These children are not tuberculous, nor is it the usual picture of bronchiectasis, for there is no clubbing of the fingers, foul sputum or occasional hemoptysis. Neither is there any evidence either historical or through the agency of physical or x-ray examination to suggest a residual pneumonia. So one may go down the list and rule out abscess, pleurisy and neoplasm.

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After some deliberation the conclusion has been reached that this condition is most closely allied to the disease referred to by some writers as the "infiltrative type of bronchiectasis" and that it probably results from infection of the upper respiratory tract in earlier childhood with secondary infection of basal ramifications of the bronchi. Perhaps it is not too far-fetched a speculation to venture the suggestion that these conditions in the child may be the potential ancestors of those cases of far advanced bronchiectasis of the adults who, because of constant cough, fetid breath and the expectoration of foul sputum, are a burden not only to others but to themselves.

The relief of this disease condition is not found in the exhibition of expectorants nor indeed of any medicament. Except for a few cases, the various methods of nonspecific protein therapy do not benefit appreciably. The condition does clear up, however, in the few cases which have been so treated by the use of roentgen radiation over the spleen, and before considering the technic of this procedure it may be well to briefly refer to recent papers on this subject.

In 1920, Hektoen[1] published an article on the effects of roentgenization and splenectomy on antibody formation. Apart from his general conclusions, he found "that the agglutinin titer ran uniformly higher in dogs treated with roentgen ray than in the controls." Waldbott[2] has very recently reported treatment of a case of asthma, apparently of the protein hypersensitive type, by means of splenic irradiation with excellent results. Gerber,[3] in a recent article on the roentgen ray treatment in bronchial asthma and chronic bronchitis, mentions the two types of treatment; direct, that is, over the thorax and its contained organs; and the indirect, over the spleen.

Gerber mentions the fact that the indirect method, "utilized chiefly by Groedel and Lossen, had an accidental basis. These authors were called on to treat a patient with leukemia and they administered some roentgen-ray treatment to the spleen. The patient was a man aged 56, who had been suffering from severe asthma for sixteen years. The physicians knew nothing about his asthma at the time but continued to treat the spleen for leukemia. Nine months later the patient whose leukemia had improved told them that after the first application of the roentgen rays to the spleen the asthmatic paroxysms had stopped and there had been no return since."

These and a number of references of German origin, where this type of treatment has been chiefly employed, suggested a trial of the method, and a number of patients suffering from severe asthmatic attacks for which no cause could be found were submitted to treatment. These have been very much benefited. Later it was decided to determine the effect of splenic radiation upon two cases of basal disease. These children responded so well that subsequently another child was placed upon treatment of the same type. Although too recently treated for certainty, his parents claim and physical examination confirms the fact that there has been considerable improvement.

The technic employed is: time, 3 to 5 minutes; milliamperes, 5; distance, 12 inches; 85 K.V.P. filter, 4 millimeters aluminum and ¼ inch leather over an area two inches square, posteriorly and directly over the spleen.

It has been generally noted that best results in this form of treatment are secured when there is induced a sharp general reaction, nausea, perhaps slight vomiting and prostration on the day following treatment. This has also to some extent been our experience. Apparently, however, equally as good results are effected if the treatment is reduced to the point where only mild nausea occurs. The reaction is quite similar to that often seen after a moderately heavy dose of vaccine is administered.

In the cases so far treated, there has been a definite response after the second doses of rays, viz., decrease of cough and wheezing and a diminution of moisture in the chest. The dosage has been repeated once a week for three treatments, followed by an interval of one month.

Perhaps the greatest justification for such treatment is the fact that these cases do clear up and the child's general health is remarkably improved, whereas the treatment of this condition by other methods of therapy in our hands has dismally failed.

BIBLIOGRAPHY

1. Hektoen, L.: Further Observations on the Effects of Roentgenization and Splenectomy Upon the Production of Antibodies. J. Infect. Dis., 27:23, July, 1920.

2. Waldbott: Roentgen-ray Treatment of the Spleen in Asthma Bronchiale. Arch. Int. Med., 36: 743, Nov., 1925.

3. Gerber: Roentgen-ray Treatment in Bronchial Asthma and Chronic Bronchitis. J. A. M. A., 85: 1026, Oct. 3, 1925.

DICK TEST AND SCARLET FEVER IMMUNIZATION*

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Scarlet fever is undoubtedly caused by a specific hemolytic streptococcus. As now known and studied it gives combined toxic and bacterial effects. Toxins are formed, as in diphtheria, and absorbed with consequent rash, fever, vomiting and malaise. Bacterial invasion of the blood stream via mucous membranes gives rise to otitis media, mastoiditis, septicemia and joint involvement.

In a previous paper I presented data on the Dick test, showing it to be a practical method to determine immunity or susceptibility to scarlet fever and to diagnose the disease. Positive reactions early and late in convalescence make the diagnosis of scarlet fever doubtful. In this disease blanching by the antitoxin is of benefit in diagnosis and as an active immunizing agent against immediate contact cases. This immunity is short lived and should be followed in three weeks by the standard toxin immunization.

The Dick Test. This consists of intradermal injections of 0.1 c.c. of a diluted soluble toxic filtrate into the skin of the forearm. Reaction begins in six to eight hours, reaches maximum intensity in twenty-two to twenty-four hours, at which time it should be read. It fades rapidly, disappearing in thirty-six to forty-eight hours.

The reaction is due to changes in the capillary blood vessels. This accounts for the rapidity of development and fleeting character of the reaction. The color of the reaction, according to Dick[1], is from faint pink to dull red, deep red, reddish brown or blue. Areas over one cm. in diameter, no matter how faint, are considered positive reactions.

Zinger[2] has shown the parallelism between the immunity of scarlet fever and diphtheria. Breast fed infants up to six months are not susceptible to these diseases but become so toward the end of the first year, as shown by the appearance of positive skin tests.

Colby[3] has shown in private practice the high susceptibility to scarlet fever in well-to-do families. This parallels the results of the Schick test.

We have recently had an epidemic of scalatina in a private school in Seattle. Two children and the mother of one of them contracted the disease. I have Dick-tested about one-third of the school, approximately twelve children between the ages of five and nine years. Of these nine were positive, and three negative. Of the positive reactions three were so marked that I split my first prophylactic dosage of 500 skin-test doses one-half.

I may be a bit too conservative, but am taking into consideration my work of last year, when we were using only 100, 250 and 500 skin-test doses for immunizing, whereas now, under the Scarlet Fever Commission, we give 500, 1500, 5000, 15,000 and 20,000 to 25,000 skin-test doses respectively for immunization at five to seven-day intervals. This is now made without alien serum which will not sensitize, whereas formerly rabbit, horse or sheep serum was used.

All of these children, as well as some older ones in the grade schools, are being immunized with the stronger toxin mixtures. All have now had the second or third doses, so far without other than local redness and soreness. In one or two instances there was a rise of temperature of less than two degrees for twenty-four hours after the injection.

Size of the Immunizing Dose. Dick[4] states that the size of the immunizing dosage is important. "It should be small enough to avoid severe reactions and big enough to stimulate the production of antitoxin so that larger amounts may be given for the second dose." "No dose should be out of proportion to the one that preceded it." Attempting to keep this in mind, in the case of a physician's child as well as two others who had severe local reactions, I reduced the dosage.

Dick states that he has observed no bad effects from larger immunizing dosage. He usually observes local reaction and redness, swelling, heat and tenderness, such as follows any serum reaction. A few cases showed rash, nausea and general malaise, usually with the first dose, or following any dose where the amount was increased out of proportion to the previous dosage. These reactions, however, are usually not as severe as are some to diphtheria or typhoid fever inoculations.

Antitoxin. I have personally had practically no experience with the antitoxin. Although first manufactured in a 20 c.c. package, it has since been concentrated to 10 c.c. Dick in his Portland lecture stated, "Give it early in the disease, give it as preventive as soon as exposed and follow with toxin mixture in three weeks."

The prophylactic dose is in reality a small theraputic dose, usually one-half of the latter being given intramuscularly. As sites of injection I have used both thigh and deltoid muscles. The patients complain of the reactions about as much in one place as another.

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Within the last year Colby has used sodium ricinoleate as a detoxifying agent, increasing the dosage from the early 500 to 4,000 skin-test doses. The use of this or some similar substance or a still further increase in dosage will probably be adopted in the future. I shall not be surprised to see a return to a three series dosage, starting in the thousands and jumping to possibly 50,000 skin-test units for the last dose. There may be evolved a modification of the castor oil soap method with a slow liberation of the toxin, in a one, two or three dose combination that combines prophylaxis and immunization of the individual at one and the same time.

When some such method as this is eventually worked out we can quickly eradicate scarlet fever in the home by rapid immunization of all susceptible individuals. At present the people do not know what they do want. Some insist on the antitoxin alone, others the toxin. The laity have only read enough to be a bit more at sea on the subject than are the medical men.

Personally, from what I have seen and read, I prefer to trust to the longer immunity as given by the toxin. In one case with direct contact exposure and a mild positive Dick test, I started with the 1500 and gave the 5000 skin-test dosage after four days, with no untoward effects and so far with no signs of the disease.

CONCLUSIONS

1. The Dick test is practicable, easily done, gives a reading in twenty-two to twenty-four hours, at which time one can decide whether to give the antitoxin or the toxin.

2. The antitoxin in prophylactic dosage in children, although it gives more severe reaction, probably prevents scarlet fever in all cases except those which are already coming down with the disease.

3. The toxin preparation, in doses which are large as compared with those given a year ago, shows no bad effects and comes much nearer to giving a life-time immunity.

4. From previous experiences I predict that we shall use still larger doses of the scarlet fever streptococcus toxin, and shall possibly combine prophylactic antitoxin and toxin doses in such proportion and dosage as to prevent and at the same time immunize the patient, possibly permanently, against scarlet fever.

BIBLIOGRAPHY

1. Dick, Geo.: J. A. M. A., 84:1479, 1925.
2. Zinger: J. A. M. A., 82:544, 1924.
3. Colby: Minn. Med., 8:568, 1925.
4. Dick, G. and Gladys: J. A. M. A., 84:1481, 1925.

LOBAR PNEUMONIA

ITS DELAYED RECOGNITION IN INFANTS AND CHILDREN*

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This is not a report of an unusual case, nor is it a lengthy discussion of the literature on the subject, but rather a brief paper on a type of case I have been coming in contact with lately and which I am sure you are all familiar with, presented with the idea that a discussion amongst us of a familiar subject may elicit assistance to all. May I emphasize that I am dealing with lobar pneumonia only.

The patient, a robust girl of four years, was seen on the second day of her illness. It had commenced with vomiting, several foul dark stools, headache and fever. The child, with a temperature of 103°, was resting comfortably in bed, respirations 37, pulse 128. No pain complained of, abdomen soft, no distension, no cough present and chest findings negative. Her tonsils were slightly inflamed and right ear drum quite injected.

On the third day of her illness temperature reached 106° and, outside of some abdominal distension, there was no change in clinical findings, except that the right ear had cleared up. The youngster's condition was remarkably good and very bright for the amount of fever present. A catheter specimen of urine showed quite a number of white blood cells. On the fifth day the condition was much unchanged, temperature keeping 105°-106°, pulse 154, respirations 50, and at this stage a thorough intestinal cleansing produced a drop to 102° with marked improvement in the child, unfortunately followed in six hours by a rise to over 106° and delirium.

On the sixth day a nose and throat specialist reported negative findings, except for a slight tonsillitis. A slight irritative cough was now occasionally present, but of no particular account, also a little soreness of the muscles of the left neck. Temperature hovered around 106° with pulse, respirations and clinical findings unchanged.

On the eighth day another pediatrician confirmed this negative report. The white blood count at this time was 22,000 with polymorphs predominating. On the ninth day a marked crisis occurred and on this morning a slight dullness was present over the lower left lobe. A radiograph at this time showed a distinct lower left lobar pneumonia. It was not until the morning of the tenth day that auscultation revealed any abnormal signs.

During the early part of this case there were, in the absence of chest signs, just enough other signs, such as the inflamed right ear, tonsillitis and pus in the urine, to cause hesitation as to the source of trouble. From the fifth or sixth day onward, in spite of lack of chest signs, one felt there must be a pneumonic process present and there was certainly no disappointment.

The late development of physical signs in lobar pneumonia in children is not at all uncommon, though a prolongation of this delay until crisis or postcrisis does not occur so frequently.

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I wish to draw attention to a modified type of the above case. For example: Recently I followed a case somewhat similar to the one just quoted, but in a much less severe form. It was felt that a pneumonia was present but no chest signs were found. At the end of five days the family, an Oriental one, telephoned not to visit again, as the child seemed so well. However, several days later, being worried by a persistent cough, one's services were again sought and a typical postcrisis pneumonia condition found.

These, then, are the types of lobar cases that are passed over, particularly this latter type, which on account of its lessened severity is overlooked to an extent more than is ordinarily realized. It is to such that we hear applied "only a cold," or that delightful covering term of "influenza" and the glibly spoken of vagueness, "intestinal flu," many of which later on, because of lack of continuation of rest and treatment, appear in that condition of chronic basilar infection, and others on account of the degree of malnutrition and persistent moisture are singled out as tuberculous suspects.

It is not my intention to enter into a discussion of differential diagnosis, for a consideration of peritoneal and meningeal symptoms would be papers in themselves, but rather to discuss the positive findings which will aid in showing up a pneumonia. In many cases, the powers of even the most learned are greatly taxed to arrive at a diagnosis which seems compatible, may I say, with "those things which we ought to have found and those things which we ought not to have found."

Let us first notice the peculiar anatomy of the lungs in early life. The proportion of alveolar to bronchial air space is much less than in adults and it is this larger proportion of bronchioles which assists in giving to normal puerile breathing its loud harsh quality. Moreover, in the breathing of children, the small and very resonant thorax, as a resonator, has necessarily a higher pitch, so that sounds of medium pitch pass through it with greater ease than through the larger thorax of the adult. The exudate, as it pours out, produces a diminution of this loud, harsh quality and the breathing becomes relatively diminished in intensity. Bronchial breathing is caused by transmission of sounds from trachea and pulmonary bronchi through a solidified area and any delay in the formation of this area and the blocking out of the air-containing tissue interferes with such transmission.

Radioscopic study of lobar pneumonia in childhood, which has been very extensive, early discloses pulmonary localization before physical signs are present, showing a characteristic image. This image appears under the form of an opaque, triangular shadow with the base always at the periphery, while the apex is directed towards the hilus. This triangle is most characteristically shown in lobar pneumonia of the apex, that of the base being somewhat more diffuse. When this shadow reaches from the periphery to the hilum, the bronchial signs develop. Therefore, the radiograph is not only a valuable aid to diagnosis but has entirely eliminated the idea of a central pneumonia and, though everything progresses clinicaly as if it were central, yet it is in reality a peripheral process and the harder it is to find the signs, the farther it is from the center. In fact, in some cases pneumonic foci in the form of the original triangle persist without any signs throughout. It may be added that this pneumonic triangle is of positive value, no other acute thoracic disease giving it. Therefore, if we consider the peculiar anatomy and the radioscopic findings, it is easy to understand the peculiarity of the physical findings in pneumonia in children.

What, then, are the positive findings we may look for in these so-called delayed lobar cases? In the absence of other causes, particularly of peritoneal and meningeal symptoms, a sudden rise in fever, possibly a slight cough, type of breathing and relationship of respiration to pulse are often a basis of diagnosis in the early stage. Pulse and respiration are greatly increased and the disturbance of the ratio of the respiratory rate to pulse rate is always present and this constitutes the *only* clinical finding which definitely points to the lungs as the seat of disease. The ratio is at least 1 to 3 and may go to 1 to 2. The breathing is not labored and sometimes is accompanied by an expiratory grunt, but this is by no means always present, nor is the movement of the alæ nasi pathognomonic. The inverted type of breathing, in which the pause occurs after inspiration instead of expiration, is fairly constant.

Bearing in mind the pathology and line of advancement of the process, it is obvious that percussion, far more than auscultation, is to be relied on. In fact, its importance cannot be overestimated and is too often done in a perfunctory manner. On a purely mechanical consideration, proven by x-ray investigation, we cannot expect to hear the typical signs we are accustomed to associate with adult lobar pneumonia until a later stage is reached. To gain indication of dullness the percussion must be done in a most careful manner, having due regard to its lightness and to the proper position of the patient to insure muscular relaxation, reducing resistance to a minimum. Moreover, one must be familiar with the areas of normal chest dullness and take into consideration, not only the liver and cardiac areas, but also two important areas of impaired resonance, the right apex posteriorly, which is frequently duller than the left, and the left midaxillary region which frequently gives a dull tympanitic note when the stomach is dilated. At all times bear in mind that dullness is only a relative term; in fact, a tympanitic note above the area where consolidation is progressing is often one's queue.

As for auscultation, when the condition has progressed enough to produce them, the typical signs are well known to all and in the early stages the diminished breath sounds, as against the normal harsh breathing, are eagerly looked for and often a small area of suppressed breathing is the only indication given. At the early stage, just when a dullness is being noticed, there may be an odd telltale rale at the end of inspiration, which quickly disappears and one might almost say it is only by luck that it is obtained.

A variation in temperature with marked remissions and, particularly in infants, two or three pseudocrises should not vary one from a suspected lobar pneumonia, in which we are accustomed to a more steady temperature. In youngsters, in so many illnesses, the referring of pain to the abdomen is so common that in pneumonia it only adds to the indefiniteness of the condition and it is not until much later that any chest pain may be felt, but in a great many cases there is complained of a soreness or stiffness in the neck on the side affected and is a sign worth while taking into consideration.

This leads one to the lobes most affected. The right upper lobe is the commonest one. Particularly is this so in very young children, but one should be on guard in view of a possible normal increased dullness in the right posterior apex. Next in order is the left lower lobe and, third, the right lower lobe, the left upper being rarely involved, possibly explained by the extrapulmonary position of the lymph nodes. Pneumonia is more frequent in the first year than the second year and commonest in the one to six period, while between six and ten it diminishes.

While pneumonia is recognized as a septicemia, yet reported series vary greatly as to the percentage showing positive blood cultures and, though a considerable number do, yet a negative report by no means eliminates the condition. As a rule, the white blood count runs fairly high, 25,000 to 50,000, with a great increase in polymorphonuclears, often to 90 per cent. This picture is, of course, by no means peculiar to lobar pneumonia, yet it is a somewhat higher count than the conditions would produce which one might confuse with a pneumonia and so may assist in elimination.

A thorough knowledge of physical signs is most essential in lobar pneumonia but even more is the ability to elicit and place a proper valuation on individual signs. There is no doubt but that greater attention to the diagnosis of this type of case would greatly affect the mortality rate, particularly in regard to the sequelæ.

CONGENITAL MIXED TUMOR IN THE KIDNEY REGION

REPORT OF A CASE*

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The kidney is one of the most frequent sites of tumor formation in children. This relative frequency is due chiefly to congenital mixed tumor of this organ. Most of the malignant tumors of the kidney, excluding the hypernephromas, are reported as sarcoma, carcinoma, sarcocarcinoma, rhabdomyosarcoma, adenosarcoma, teratoid tumor, or embryomatous tumor. This indicates its variable structure, and also the different opinions which are held as to its nature. Schultz and also Young believe it best to call them all mixed tumors.

The interesting feature of the case to be described, wherein it differs from any of the previously reported cases in the available literature, is that the tumor originated and remained wholly outside the kidney itself.

S. G., infant girl, referred by Dr. Staube of Portland, was first seen on Sept. 3, 1925, when 17 months old. She showed moderate anemia, malnutrition and a mass in the upper left quadrant of the abdomen, extending 4 cm. below the costal margin, which was taken to be an enlarged spleen. Blood Wassermann was negative, hemoglobin, 55 per cent; red blood cells, 4,704,000, color index, 0.6, white blood cells, 15,000.

Differential count showed neutrophils, 53 per cent; basophils, 0 per cent; eosinophils, 0 per cent; small lymphocytes 43 per cent; large lymphocytes 3 per cent; transitionals 1 per cent. Urine was normal and remained so on subsequent examinations. Stool was normal.

The previous history is that of an only child born of young healthy parents. The birth was slightly premature, the baby weighing about 6 lbs. Breast fed for 10 months. At 6 months she weighed 14 pounds. The present weight is 15 pounds, a gain of only one pound in 13 months.

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At one year the baby had what was thought to be whooping cough for which she was given four injections of a pertussis vaccine. Weight remained stationary and there was loss of appetite. Three or four weeks before the present examination she had a gastrointestinal disturbance and the tumor mass was first felt in the left hypochondrium. Progress downward from this point was very rapid until death on Oct. 26, 1925, about two and one-half months after the onset of severe symptoms with palpable tumor.

Cachexia was marked. At no time did the urine show any change from the normal. The extension of the tumor mass, from the left costal margin downward, involved the upper half of the abdomen. At no time did gas show in the intestine over the mass. These findings led to the clinical diagnosis of sarcoma of the spleen.

A month and a half after the onset there was bulging of the left eyeball which increased and was later followed by bulging of the right eyeball. The baby was blind one month before death. Radiograph of the skull showed "a growth at the base of the brain that had destroyed the bony structure adjacent to the pituitary body." Metastatic nodules appeared, a large one on the right lower jaw and two smaller ones on the skull. Death occurred from exhaustion and inanition.

Autopsy was performed by Dr. Warren C. Hunter, who made the following anatomic diagnosis: "Small round cell sarcoma, probably primary in retroperitoneal region of abdomen; sarcomatosis (metastases occurring in the periosteum of the skull, sella turcica, sphenoid, ethmoid, left temporal fossa, right lower mandible and pleural surface of ribs); distortion of shape of both kidneys and pancreas by pressure of tumor and marked chronic emaciation and anemia. Microscopic examination of the tumor shows a sarcoma of the small round cell type."

There is no general agreement as to the exact origin of this kind of tumor. The fact that it occurs so early in life or may even be present in the fetal period, as in the reported cases of Walker and Porter and Carter, definitely places it as a congenital or embryonal tumor. How far back into embryologic development we must go for its origin has caused some discussion, because of the presence of so many different types of tissue present.

According to Schultz these theories as to the origin of the congenital mixed tumors of the kidney may be grouped under four headings.

1. Busse and Muus hold that the tumor is derived from the tissue of the fetal kidney itself, after it has been differentiated from the rest of the primitive urogenital system.

2. Birch-Hirschfeld holds that the tumor takes its origin at a somewhat earlier period of embryonic life; from the anlage of the primitive kidney or wolffian body, at a stage when the latter has not yet given rise to definite renal tissue.

3. Wilms holds that the tumor arises at a still earlier period, before the mesoderm of the mid-dorsal region has given rise to myotome, sclerotome or nephrotome.

4. Ribbert holds that the tumor is developed from a totipotent blastomere, misplaced at a stage of development before the three primitive germ layers have been formed.

The present reported case, wherein the primary tumor occurred wholly outside the kidney, strengthens the theory that this class of tumor is derived from embryonal tissue before any nephrogenous tissue has been differentiated.

NEURITIS*

ITS CLINICAL SIGNS AND SYMPTOMS

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Diseases have their fashionable periods like millinery and social amusements. A disease that confers distinction to its owner today may be banal and vulgar tomorrow. Various pains and aches around this human body of ours that attack us during the dull days of middle and old age have hitherto been satisfactorily described as "rheumatism." This term now is almost as obsolete as gout, and savors of the commonplace and the scrub-lady. Accordingly, it has been discarded for the more elegant, up-to-date and fashionable term of "neuritis." This name, which denotes a distinct pathologic entity, has been shamefully abused and used indiscriminately for every pang and twinge that does not lend itself to a ready explanation. The term neuritis carries a clinical concept covering much more than the one symptom of pain. Accordingly, an attempt will be made to describe just what it does mean and the many and varied clinical manifestations covered by the diagnosis of neuritis.

As the name implies, neuritis is an inflammatory disease of nerve trunks, their branches and their endings; it has also been used to cover the lesions of trauma and the degenerative changes resulting from toxic processes. The chief assault may be made on the fibrous tissue tunic and the supporting framework of the nerve fiber or on the neural structures themselves. In the first instance the disease is called an interstitial and in the second a parenchymatous neuritis. The first is common in inflammations, the second in degenerations due to toxins. A sharp distinction cannot, however, be made between these two different types, since inflammation of the perineurium and endoneurium usually also involves the nervous parenchyma, and primary degenerative processes are almost always associated with changes in the supporting connective tissue.

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TYPES OF DISEASE

Disease may involve one single nerve alone in its trunk or branches or it may attack the finer ramifications of a multitude of nerves throughout the body. In the former case we talk about mononeuritis, in the latter peripheral or multiple neuritis or polyneuritis. These three last names are synonomous and the term multiple neuritis is selected here as being the most fitting. Mononeuritis is usually a result of trauma, but in certain instances it may be due to inflammatory disease, as in sciatic neuritis. Multiple neuritis, on the other hand, is exclusively a product of a diffuse inflammatory or toxic process and it can be easily understood that trauma cannot involve large areas in the body surface with their corresponding nerve endings without instant or speedy death of the patient. It may, however, involve contiguous groups of nerves and nerve plexuses. As well as these traumatic, inflammatory and toxic causes for neuritis, there are types of the disease associated with familial or hereditary tendencies toward degenerative changes in the nerve fiber with overgrowth in the supporting connective tissue. A hereditary or familial neuritis is therefore spoken of, such as the rare disease known as the hypertrophic interstitial neuritis of infants. Finally, in certain diseases, such as diabetes, pernicious anemia and beri-beri, the actual cause is not clearly understood, and therefore the type of neuritis is hard to classify.

GENERAL SYMPTOMS

In any given case of neuritis there are certain prominent symptoms and signs and the clinical picture is usually clean cut. Pain is seldom absent; it may be sharp, darting, and radiating along the distribution of the nerve to the terminal endings in the limb affected. It may also be dull, aching and burning, and described by the sufferer as a pain resembling a tooth-ache. In either case the nerve trunks are exquisitely tender and they may be swollen and indurated. The muscles in the same area are also tender and all movements of the limb may be inhibited because of pain.

Paresthesia of various types is also common and extends up the limb from the periphery to somewhere along its length. It is described by the patient as tingling, prickling or numb sensations, a feeling as if the limbs were "asleep," or sensations like those felt when the ulnar nerve is compressed at the elbow. Varieties of paresthesia are usually aggravated by compression of the affected limb, and the patient may describe sensations which the public call "pins and needles," when the sole of the foot rests on the ground or the hand is used for grasping. The important thing to appreciate in regard to parethesia is that it is constantly present in cases of true neuritis and remains localized. It is not fluctuating and intermittent, like the unpleasant sensations felt by fat nervous persons who take little exercise or that felt by persons with poor vasomotor control.

Hyperesthesia, an intense sensitivity of the skin to light touch, is common and it may be combined with a blunting of sensation to other forms of stimulus such as a pin-prick or heat. A pin-prick produces a disagreeable sensation but it is not accurately localized or discriminated.

Anesthesia or total loss of sensation is uncommon except in severe cases. More usually there is partial loss of sensibility to touch, pain, and temperature in the area of distribution of the nerve or nerves involved. Appreciation of the vibrations of a tuning-fork over the bony prominences of the upper and lower extremities is much more frequently and severely affected. There is also loss of the sense of position of the extremities in space, so that the joints may be moved in various directions by the examiner without the patient knowing which way they are moved. The patient cannot tell what he is grasping; he cannot feel the buttons on his clothes and when he walks he cannot tell where his feet are wandering, and he staggers unsteadily.

Paralysis, partial or complete, occurs in the muscles supplied by the nerve or nerves. The muscles waste and shrink, and voluntary activity may become impossible. Usually the paralysis is a flaccid one; the limbs become flail-like and dangle grotesquely like those of a cloth doll.

Changes in reflexes are nearly always present and consist of diminution or loss of the tendon reflexes. When the lower extremities are involved, percussion of the patellar and Achilles' tendon fails to produce the usual brisk muscular contraction. Rarely they are exaggerated in the early stages of neuritis.

Trophic changes appear in the skin, bones and subcutaneous fat, especially in cases in which the median or tibial nerves are involved. The fingers become like claws covered by a smooth, hairless, glossy skin. The bones are atrophied and the subcutaneous fat is lost. Ulcers appear that are slow to heal and the nails become brittle and crack.

Vasomotor disturbances appear in the form of dilatation of the superficial arterioles so that the part involved is red and feels warm to the touch. The reverse may also happen, and pallor and frigidity be manifested. In some instances the whole limb become edematous.

Secretory disturbances in the sweat glands are common with either excessive sweating or lack of sweat and abnormal dryness of the skin.

The distribution of these changes varies with the nerve or nerves involved. In mononeuritis they are confined to the particular area supplied by the nerve. In multiple neuritis all four limbs are likely to be involved and the distribution is bilateral and symmetrical, occupying the so-called "glove and stocking" areas with the maximal effect at the periphery and shading off in degree towards the trunk. The degree of the suffering and disablement also varies from a mild paresthesia to an extremely painful paralysis of all four limbs with complete helplessness. When single nerves are involved, the motor disturbance may be greater or less than the sensory. In injuries of the radial nerve the paralysis of the extensor muscles far exceeds the small area of anesthesia on the dorsum of the thumb and hand. This may even be absent. In injuries to the lateral cutaneous nerve of the thigh there is no motor paralysis at all but only a patch of anesthesia over the lateral surface of the thigh. Apart from these variations, and in the majority of cases of true neuritis, there are most, if not all, of the signs and symptoms already described.

TRAUMATIC NEURITIS

In this mechanical age man is in constant peril of injury by the machines that he has created for his own use and enjoyment. Under certain circumstances he is worse off than primeval man of the stone and bronze ages who had only the claws and fangs of wild beasts to contend with. In the crushing, mangling injuries due to industrial machinery, to automobile wrecks and to shot and shell, the nerves receive their full share of the damage inflicted on the human body. It would be manifestly impossible to describe all of the clinical syndromes resulting from nerve injuries, but a few of the more common types may be mentioned.

Injuries of the brachial plexus are relatively common as compared to injuries of the nerve plexuses of the lower extremities. This is chiefly due to the greater mobility of the upper extremity and the limited bony protection afforded the nerve trunks. A common source of injury is in dislocation downwards of the head of the humerus from the glenoid fossa of the scapula; forced abduction, extension and torsion of the upper extremity may tear the plexus in its various strands. A patient may have his arm caught between the belt and pulley of a machine and be whirled around forcibly and flung to the floor.

Another common type of injury to the plexus occurs when a patient is shot head first from an automobile or bob-sled. It is possible for one side of the head and the tip of his shoulder to strike simultaneously against a post or wall and the forced abduction of head and shoulder lead to tearing of the plexus either in its continuity or by its roots from the attachment to the cord. A sign of this latter misfortune is paralysis of the sympathetic fibers leading to the eye. The globe recedes, the ocular fissure becomes narrowed, and the pupil is smaller than that of the opposite side (Horner's syndrome). The sympathetic fibers leave the spinal cord along the eighth cervical and first dorsal roots but leave these roots before the brachial plexus is formed. Accordingly, signs of their paralysis mean that the injury is in the roots and near the cord, and more usually an avulsion of these roots has taken place. No regeneration of these roots is, therefore, possible and the outlook for recovery is poor. Occurence of this sign also discourages any attempt at operation on the injured area, for avulsed roots naturally cannot be replaced.

A complete lesion of the brachial plexus is shown by paralysis of all the muscles of the upper extremity. The arm dangles helplessly, is usually swollen, and is anesthetic up to an oblique line running around the arm from just above the insertion of the deltoid to the upper part of the middle third of the medial surface of the arm. Partial injuries of the brachial plexus occur and have been classified into injury of the upper plexus or Erb's paralysis, which includes fibers supplied by the fifth and sixth cervical roots, and injury of the lower plexus or Klumpke's paralysis, in which the nerves supplied by the eighth cervical and first dorsal nerve roots are injured (fig. 1). Erb's paralysis involves the deltoid, biceps, brachialis anticus and supinator muscles, and there is a strip of anesthesia on the outer surface of the arm and forearm. Klumpke's paralysis, on the other hand, involves the small muscles of the hand and the muscles of the forearm, chiefly the flexors, and there is an area of anesthesia on the medial aspect of the forearm and hand. These two types of injury may occur in greater or less degree and the signs produced depend on the extent of the damage.

So far as the ulnar nerve is concerned it may be injured in a variety of ways since it is relatively exposed in its course around the internal epicondyle of the humerus. Fractures and dislocations of the elbow joint play a large part, but the nerve may be injured by a surgeon with too prominent an abdomen resting his bulk on the arm of an anesthetized patient during an operation. Again, the mere weight of the arm itself may injure the nerve in persons who have been lying for a prolonged period of time on their backs on a hard surface. An interesting type of ulnar nerve lesion is that called tardy ulnar paralysis.

Case 1. A patient came to the clinic December 16, 1921, because of weakness and numbness of his left hand with wasting of the muscles. Seventeen years before he had fractured his left elbow, and slight limitation of motion in that joint had persisted. He was able, however, to use the arm fairly well for all purposes. Seven months before admission he had noticed tingling and numbness in the ulnar margin of the left hand and in the little finger, as well as the ulnar side of the ring finger. About the same time he also noticed slight wasting in the muscle between his thumb and index finger. The hand had become weaker but he was still able to use it in heavy work.

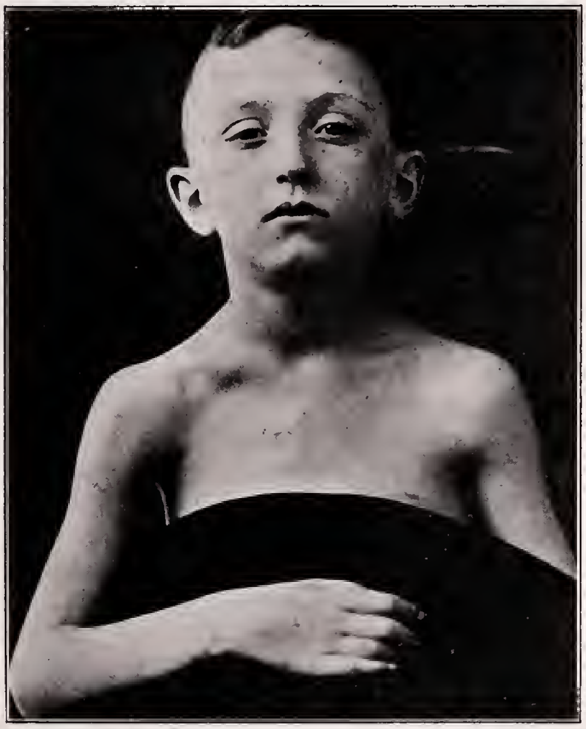


Fig. 1. Paralysis of the lower brachial plexus (Klumpke's paralysis), avulsion of the seventh and eighth cervical and first dorsal roots. Involvement of the cervical sympathetic fibres with Horner's syndrome on the side of injury.

Examination showed weakness and wasting of the adductor pollicis, interossei and intrinsic muscles of the fifth finger of the left hand. There was slight numbness over the ulnar margin of the hand. The elbow joint was enlarged and broadened, and the roentgenogram showed an old fracture of the lower end of the humerus with wide separation of the fragments. The ulnar groove at the posterior aspect of the medial epicondyle was shallow and the ulnar nerve was comparatively superficial, unprotected and easily felt as a thickened, indurated, nodular cord.

The mechanism involved is that the elbow injury results in partial obliteration of the ulnar groove behind the internal epicondyle of the humerus. The nerve, therefore, becomes more superficial and is constantly subject to minor injuries which in time produce interstitial neuritis and a thickened nodular nerve. It is possible, also, that the pulley surface on which the nerve moves in extension and flexion of the arm is roughened and the nerve becomes stretched and irritated with every movement of the elbow. Satisfactory results in early cases are obtained by transferring the nerve out of harm's way to the medial surface of the elbow in front of the epicondyle.[3]

The radial nerve is likely to be injured in fractures of the middle third of the humerus or else compressed later by callus, produced during the repair of the broken bone. Paralysis of the extensors of the wrist and supinators usually follows a severe injury, and drop-wrist is the term employed to denote the inability to extend the carpus. While the first phalanges are affected in the paralysis of extensors, the second and third can be moved dorsally by the lumbricales and interossei. The anesthesia produced by injury of the radial nerve is surprisingly small and includes only a small patch on the dorsum of the thumb and the skin over the first interosseous space.

The median nerve is commonly injured in the forearm by stab wounds and by the broken glass of windows and automobile windshields. When it is cut in the forearm there is paralysis of the muscles of the thenar eminence and the two lateral lumbricales. The resulting anesthesia occupies an area on the radial side of the palm, the ball of the thumb, and the palmar surface of the index and middle fingers with half of the ring finger, as well as the dorsal surface of the first two phalanges of the index and middle finger. Trophic changes are common; the skin over the anesthetic fingers becomes thin, glossy and pink, and ulcers commonly appear on the index finger. Pain is a frequent result of injury to the median nerve and occasionally it becomes intensely severe.

That rare but intensely distressing clinical syndrome called causalgia, first described by Weir Mitchell,[2] is seen in injuries to the median nerve. After a varying period and usually following partial injury of the nerve an intense bursting, throbbing, burning pain appears in the palm near the base of the thumb, index and middle fingers. This is constant and exacerbations may be excited by the lightest touch on the painful area. Heat makes the pain worse and moisture relieves it; hence many of the patients carry a moist rag in the hand. They usually carry the arm in a sling, since a dependent position increases the pain. They are intensely anxious and apprehensive of the slightest touch on the painful member, turning away and drawing back when it is reached for. The skin over the palm is pink and mottled, covered with beads of sweat, and the fingers have the usual claw-like appearance of median-nerve neuritis. The intense suffering demoralizes the unhappy patient and relief is often only given by resection of the injured part of the nerve or without resuture.

In injuries to the pelvis and lower extremities the lumbosacral plexus is not often involved, chiefly because of its ample protection by the massive bones of the pelvis and hips. An interesting type of plexus injury is that of the lumbosacral cord during pregnancy and parturition. This portion of the plexus is formed by the fourth and fifth lumbar roots and dips over the brim of the pelvis in front of the ala of the sacrum. It is usually taut and close to the bone. While previously it was thought that pressure by the child's head during delivery or by the forceps injured it and produced a unilateral or bilateral peroneal paralysis and foot drop, the fact that this paralysis sometimes appeared even before delivery has upset this hypothesis. It has been pointed out that other factors besides pressure are needed to explain it.[1] The pelvis joints are lax during the last few weeks of pregnancy, and it is suggested that tilting forward of the sacrum with increased tension on the lumbosacral cord may be the real explanation of these unfortunate paralyses that appear during the last few weeks of pregnancy and during delivery.

The femoral nerve is seldom injured and primary inflammatory neuritis of it is so rare that signs of irritation or destruction of the nerve should always lead to a suspicion of some malignant process on the posterior wall of the abdomen near its roots of origin. One striking example of this was in a patient seen here recently who had visited various medical centers for two years, complaining of pain and anesthesia in the area supplied by the nerve. At one time a diagnosis of femoral neuritis was made and alcohol injected into the nerve without any other result than to increase his pain. Later laminectomy failed to confirm the suspicion of a tumor in the spinal canal. Finally, and before his admission to the clinic, the patient made the diagnosis himself by feeling around his abdomen and discovering a large tumor in the left lower quadrant just above the inguinal ligament. Exploration showed a large retroperitoneal sarcoma, from which he ultimately died.

A patient may seek advice because of a prickling, tingling, painful patch over the lateral surface of the thigh. Unless the condition is recognized it may be puzzling to account for. It is the main feature of a disease called meralgia paresthetica which is actually a compression neuritis of the lateral cutaneous nerve of the thigh. The nerve passes under the extreme lateral extremity of the inguinal ligament and through the dense fibrous sheet of the fascia lata. In one of these situations it is likely to be compressed by belts, corsets, or by pressure of the tense fascia lata in standing and walking. The nerve becomes thickened and fusiform, and usually the condition progresses to the production of a patch of anesthesia which becomes permanent.

Relief of sciatica is often attempted by radical measures that too often substitute a condition worse than the original disease. We have seen a few cases of complete sciatic paralysis produced by the old operation of stretching. Under general anesthesia the leg is extended at the knee, then forcibly flexed on the abdomen and occasionally the nerve becomes torn across. The result is paralysis of the leg below the knee and anesthesia over the outer surface of the leg, on the heel, toes and dorsum of the foot. The open operation of cutting down on the nerve and stretching it is less dangerous but, like the other, the process is not controlled and similar results may follow. Injection of alcohol into the nerve has been used in the past as a cure for sciatica and fortunately it is now obsolete. In one case observed here, in which this injection had been performed elsewhere some months before, paralysis of the leg with severe burning pain far exceeding his original sciatica had occurred, almost immediately after the injection of alcohol. The foot became exquisitely tender, trophic changes appeared in the skin and painful paresthesia was produced by the slightest pressure. He had been disabled for well over a year when we saw him and is likely to remain so.

The leg-rests used in gynecologic operations, especially with the patient in the Trendelenburg position, are potent causes of sciatic paralysis and they may introduce a distressing complication of an otherwise successful operation. Any prolonged pressure in the popliteal fossa by a sharp-edged structure can cause traumatic neuritis of the sciatic nerve or its two branches, the tibial and common peroneal. A comedy that became a tragedy was seen here in the case of a man who while drunk sat on the edge of a barrel and promptly fell in. The barrel was of medium size and he became wedged in it, helpless to get out, with his knees under his chin and the sharp edge of the barrel impinging on the back of his knees. His friends rescued him some hours later to find that both legs were paralyzed and anesthetic, and they remained so for many a long day as a tragic souvenir of a moment's indiscretion.

The common peroneal, as it winds around the neck of the fibula, is exposed to all sorts of injuries. Those due to plaster casts, splints or other appliances are common and likely to occur in the practice of even the most wary of surgeons. The usual result of injury to the peroneal nerve is weakness of the anterior tibial muscle and the peronei. The patient cannot dorsiflex the foot or evert it and he cannot walk on his heels with the soles off the ground. In walking he raises the foot high and it makes an audible slapping sound on striking the ground. There is numbness of the dorsum of the foot and outer side of the leg which is slight. Patients convalescing from abdominal operations who sit for long periods with one limb crossed over the other, discussing the ordeals they have been through, sometimes add to them another misfortune in the shape of a drop-foot and numbness over the instep and dorsum of the foot. The mechanism of development of this complication is simple, yet the cause of the paralysis may be mysterious to the uninitiated. The patients have usually lost weight, their legs are thin and their knees sharp and when crossing one leg over the other they use one particular limb by force of habit. Due to their leanness, the knee of one leg becomes snugly wedged under the other so that the sharp lateral edge of the patella impinges on the peroneal nerve and the continuous pressure of hours of such a posture leads to a peroneal neuritis, paresthesia, drop-foot, and loss of faith in the goodness of things. In this instance, however, when the cause is removed cure is effected, but the neuritis may last some weeks before it disappears.

INFLAMMATORY NEURITIS

While injury is more likely to affect one nerve or part of a nerve plexus, general infections and inflammations tend to attack the peripheral endings of all the nerves leading to the extremities and produce multiple neuritis. However, there are at least two nerves that are unduly susceptible to inflammatory processes, namely, the seventh cranial or facial nerve and the sciatic. Neuritis of the facial nerve produces the well known Bell's palsy. The patient cannot wrinkle the forehead, close the eye, twist the mouth, or wrinkle the skin over the chin on the side affected. He has to pick food out from between his cheek and teeth, his eye runs tears, taste may be defective on one side of his tongue, and noises may be unpleasantly shrill in the one ear. The suddenness of onset is embarrassing and is sometimes attributed by the public to a "stroke," to delude the physician into thinking that apoplexy has occurred. Questioning, however, usually brings out the story of exposure or a cold a few days before and an ache over the mastoid region for some hours prior to the onset of the paralysis. When recovery ensues, usually some weeks or months later, dissociation of facial movements is lost. When the patient winks his eye, his forehead and mouth move with it, with little puckerings over the chin, so that years later one can tell that the patient had suffered from facial paralysis and that the nerve had regenerated as best it knew how.

Sciatic neuritis is a painful affection and commands the hearty respect of all who have suffered from it. The onset may be sudden and the pain may radiate from the hip down the posterior aspect of the thigh to the outer side of the leg and the calf. The nerve is extremely tender and may be thickened and indurated. The Achilles reflex is lost and numbness may be present over the dorsum of the foot. The posture of the patient in the office is characteristic. He sits on the buttock of the sound side, with the painful limb extended at the hip and flexed at the knee. To reverse this posture by extending the leg at the knee and flexing it at the hip produces severe pain and is stoutly resisted by the hamstrings (Kernig's sign).

The brachial plexus is less often affected, following exposure or during the course of acute infections. Severe pain then occurs and radiates down the arm from the axilla to the finger-tips with annoying tinglings in the hands and tenderness along the nerve trunks in the medial bicipital groove. This brachial neuritis seldom produces any marked anesthesia, paralysis or reflex changes, and is commonly associated with inflammation of joints, muscles and tendon sheaths. The picture is, therefore, seldom that of a pure neuritis; rather is there limitation of motion, pain and creaking in the joints, tenderness over the subacromial bursa and inability to flex the fingers because of tenosynovitis. The neuritis is, therefore, only part of the inflammatory syndrome.

When an acute infection, instead of settling in one nerve or nerve plexus, involves the peripheral nerves of all four extremities, multiple neuritis is produced, which has a characteristic clinical appearance that is readily recognized.

Case 2. A man, aged forty-two, was brought to the clinic December 23, 1925, because of weakness in the arms and legs.

Four weeks before he had contracted influenza and suffered from general malaise and muscular pains. He was in bed for two weeks, with a fever nearly all that time, and towards the end of this period while the fever was abating he noticed numbness and tingling in the fingers and toes. After he left his bed this numbness progressed to involve the arms up to the elbows and that in his toes ascended to above his knees. He became unsteady in his gait, his feet on contact with the floor pricked and tingled and severe aching pains in the calves kept him awake at night. The hands became so numb that he lost the sense of touch and could not button his clothes or cut his meat. Muscular weakness had appeared in his arms and legs so that he had been unable to grasp any heavy object or climb stairs.

The patient was confined to his bed and almost helpless so far as his limbs were concerned. He had to be fed and dressed and could walk only with support on each side. All of the tendon reflexes were lost and there was a moderate diminution of sensation to pain, touch, and temperature as high as the elbow in the upper extremities and the middle part of the thigh in the lower. This sensory loss was most severe in the hands and feet, and shaded off into normal higher up the limbs. He was unable to recognize objects placed in his hands and he could not tell whether or not one limb was crossed over the other. Vibration sensibility was lost over the wrists, elbows, ankles and knees. The sense of joint movement and position was lost in the fingers and toes. The nerve trunks were extremely tender as well as the muscles, especially the calves and biceps. The skin over the palms of the hands and soles of the feet was a mottled pink and perspired freely. No sensory or motor changes were present in any other part of the body except in the limbs, and he had perfect control of the sphincters.

During the next month or six weeks he became somewhat worse and thereafter commenced to improve. This improvement was steady and at the end of a year he was up and around, apparently normal again except that the tendon reflexes were still absent and some slight atrophy was present in the leg muscles.

The points to be noted in this case are: (1) the bilateral symmetrical distribution of the pain, weakness, paresthesia, and reflex changes in all four extremities; (2) the commencement of the paresthesia in the fingers and toes and their proximal progression; (3) the absence of any involvement of the trunk; (4) the marked degree of tenderness in the nerve trunks and muscles and the intensity of the paresthesia; and (5) the escape of the sphincters.

Inflammatory multiple neuritis may occur during the course of or following such acute infectious diseases as influenza, tonsillitis, typhoid fever and puerperal infections. It may also occur as an acute primary infection of the peripheral nerves. The course is usually as described in the case reported and the severity varies with the virulency of the infection.

TOXIC NEURITIS

Multiple neuritis of toxic origin has much the same general appearance, only there is no fever or sign of infection. Instead of the manifestations of acute infective disease there are present individual peculiar features of the toxin process elsewhere in the body.

The more common toxic agents capable of producing multiple neuritis are lead, alcohol, arsenic and the toxin of diphtheria. The toxemias of pregnancy, especially in hyperemesis gravidarum, may produce multiple neuritis and it may be quite severe. There are certain cases of multiple neuritis without fever or signs of infection, wherein a toxic origin may be suspected but no actual cause discovered. As a whole, the clinical picture in each case is the same and has all the cardinal symptoms of neuritis of the peripheral nerves supplying the extremities; there are, however, certain individual differences by which the peculiar action of some of the toxic agents may be recognized. Alcoholic neuritis may follow delirium tremens or occur during the course of alcoholic psychosis. It is characterized by a painful paralysis of the lower extremities with bilateral drop-foot. The calves are very tender and the soles hyperesthetic. Arsenical neuritis, on the other hand, tends to affect all four extremities equally, with paralysis of the muscles below the elbows and knees. It often follows overdosage of Fowler's solution or the use of sulpharsphenamid when given too vigorously. Vomiting and diarrhea are common accompaniments, as well as pigmentation of the skin and mucous membranes and keratosis of the soles of the feet and palms of the hands. Lead neuritis is painless, without paresthesia and characterized by paralysis of the extensors of the wrist, the supinators escaping. Painless wrist-drop is, therefore, a common sign. Associated findings are the blue line on the margins of the gums and a basophilic stippling of the erythrocytes with anemia. Abdominal colic is common early in the disease. It may occur in painters, potters, or all those who handle lead or its compounds. Woltman[4] published a case of a woman who had contracted lead poisoning from the continuous use of a certain face-enamel that was shown to contain lead sulphate. Diphtheritic neuritis may follow an attack of faucial or laryngeal diphtheria. It may also follow the diphtheritic infection of a wound. It is by far the most common of all the types of multiple neuritis.

Case 3. A man, aged twenty-three, was brought to the clinic in March, 1925, because of weakness of the arm and legs. Three months before he had contracted diphtheria and during the period of acute illness had had trouble in swallowing and regurgitated fluid through the nose. This difficulty disappeared as the diphtheria subsided. Three weeks after the onset he had had difficulty in reading for about two days and was unable to see print close to the eyes, although vision for distant objects was very good. Four weeks from the onset of the diphtheria he considered himself well and went back to work. He got along very well for three weeks, when a numb, dead feeling appeared in the fingers and spread up the arms. Within two weeks the lower limbs became affected so that all four extremities had become involved. Eight weeks after the onset there was almost complete loss of power of all four extremities but he was slowly improving at the time of his admission.

At the time of his examination he was confined to bed and was completely helpless. Loss of power of all four extremities was marked and the muscles were soft, flabby and tender. The weakness was most marked towards the periphery. There was very little disturbance of sensibility to pain, touch or temperature, but that to vibration and joint movement was severely affected. The local process in the throat had apparently disappeared and there was no residual paralysis of the palate. Ocular accommodation was normal. He recovered completely within nine months (fig. 2).

The salient features of diphtheritic neuritis are well shown by this case, and the course of the disease was characteristic. The throat infection and palatal paralysis are followed by paralysis of accommodation which is usually mild and transitory. It is typical that there should be a latent period of comparative health before the multiple neuritis put in its appearance at least six weeks after the onset of the disease and when the patient thought himself well.

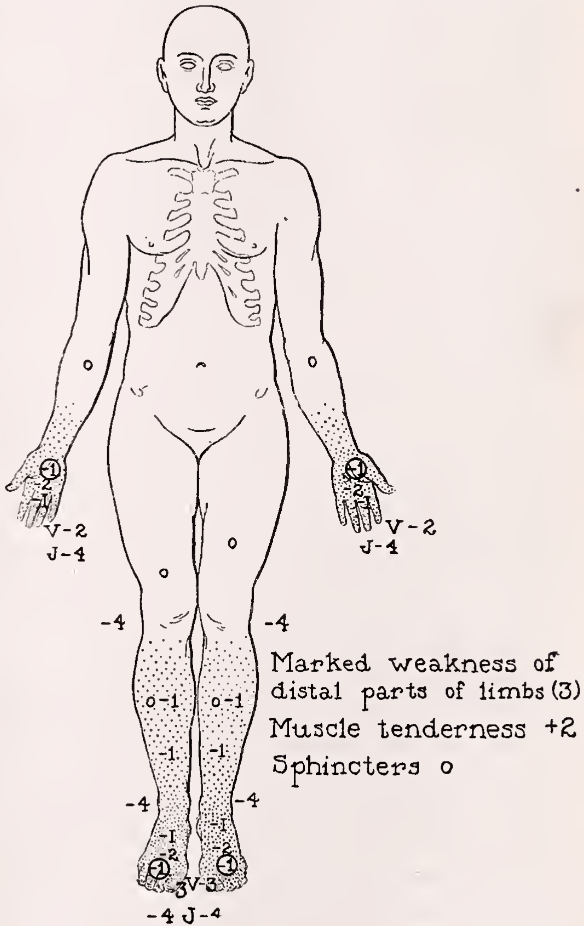
During the course of pernicious anemia patients may complain of paresthesia in the fingers and toes which persists and spreads up the limbs toward the trunk. This represents a stage of a multiple neuritis which appears before signs of involvement of the cord. The latter is shown by the numbness in the legs spreading up to the waist with the development of a girdle sensation, loss of vibratory sensibility over the iliac crests and incontinence of the urine.

In diabetes the multiple neuritis which may develop some time or other during its course is characterized by sharp lancinating pains that resemble those of tabes. These, combined with the loss of tendon reflexes and the usual impotence, may make the differential diagnosis at first difficult. The calves are, however, very tender and the clinical signs of diabetes apart from the neuritis will help to differentiate it.

Leprosy produces multiple neuritis, in which as well as the peripheral anesthesia there are also anesthetic patches scattered over the trunk and face. The nerves are enormously thickened and trophic changes in the fingers and toes are severe. The gangrene and ulceration are much greater than that seen in any ordinary neuritis. The relatively painless character of the disease is in contrast to the severe objective signs.

DIFFERENTIAL DIAGNOSIS

The lightning pains of tabes dorsalis often precede for years the development of the more objective signs of the disease. These sudden sharp localized twinges that appear in paroxysms, selecting a different part of the body each time, are invariably referred to by the patient with tabes as his "neuritis." Usually this has been the diagnosis heretofore until ataxia, incontinence and girdle pains come along to demonstrate the true state of affairs. Even then it is possible that the patient does not associate these former pains with the new symptoms, since they have been part of his existence for so long a



Marked weakness of distal parts of limbs (3)
Muscle tenderness +2
Sphincters o

Fig. 2. Course and findings in a case of diphtheria paralysis.

time. The pains themselves are characteristic and need no differentiating except perhaps from those of diabetic neuritis, but a shrewd pinch directed at the calf or Achilles' tendon usually clears up the diagnosis. The patient with diabetic or other form of neuritis will wince and grunt, but the patient with tabes will remain unconcerned and continue his conversation, even though the examiner's thumb is cracking under the force applied. The zonal anesthesia around the chest at the nipple line and the Argyll-Robertson pupil are ready finger-posts to a correct diagnosis.

An acute case of anterior poliomyelitis sometimes suggests neuritis because of the extreme pain and muscle tenderness. The segmental character of the paralysis, its asymetrical distribution and its sudden appearance are points against multiple neuritis.

Chronic arthritis may be associated with a marked degree of atrophy around the joint and suggest neuritis. The distribution of the atrophy above and below the inflamed joint, limitation of motion, swelling in the joint, with total absence of anesthesia, demonstrate the existence of an arthritic rather than a neuritic process.

The root pains of a cord tumor situated in the cervical or caudal region may simulate neuritis of the brachial plexus or sciatic nerve. The pains, however, are spontaneous, not associated with local tenderness in the nerve trunks or muscles, and they are worse at night. Anesthesia extending from the arm onto the thorax and from the leg onto the buttock and anal region, together with the loss of sphincter control, indicates involvement of the cord or cauda rather than a peripheral lesion.

A neurofibroma on a nerve supplying one of the extremities may produce pain, paresthesia and paralysis, and suggest inflammatory mononeuritis. The difficulty is increased if the tumor is hidden away from examination in the depths of the axilla, under the pectoral muscle or in the pelvis. The pain, however, is more constant than that of neuritis and the finding of small nerve tumors in other parts of the body may help to differentiate.

In elderly patients mild cerebral vascular thrombosis may leave weakness and numbness of one extremity, suggesting peripheral neuritis. A careful history will tell of the sudden appearance of extensive and more severe weakness that has since improved. The increase in the tendon reflexes and the presence of Babinski's sign on the side involved will indicate a central lesion.

Hysteria, the great simulator and imitator of diseases, the bug-bear and stumbling-block of the diagnostician, comes last but by no means least as one of the greatest problems in the differential diagnosis. We are at least somewhat grateful to the person subject to hysteria in that the simulation is overdone and exaggerated and the anesthetic zones conform to no anatomic area but wander from day to day over the limb to the trunk and back again. The paralyses are massive, yet they fluctuate, and a totally paralyzed arm will look plump and well muscled. The tendon reflexes are preserved and there are no trophic or vasomotor disturbances. The most important point of differentiation, besides the inconsistency of the anesthesia and its enormous variation, lies in the discrepancies exhibited by the patient during the course of an examination. A hand that is totally anesthetic may be able to pick up an object when the patient's eyes are shut and the totally paralyzed arm may remain suspended in the air when the examiner's hand is suddenly removed. The use of suggestion either to increase or decrease the disability is the last argument, and a sudden miraculous cure by theatrical and spectacular methods banishes all doubt as to the presence or absence of organic disease.

BIBLIOGRAPHY

1. Doyle, J. B.: Personal communication.

2. Mitchell, Weir: Injuries of the Nerves and Their Consequences. Philadelphia, J. B. Lippincott, 1872.

3. Shelden, W. D.: Tardy Paralysis of the Ulnar Nerve. Med. Clin. N. Amer., v, 499-509, 1921.

4. Woltman, H. W.: Lead Poisoning from Face Enamel. Jour. Am. Med. Assn., 79:1685, 1922.

A UNIVERSITY HEALTH SERVICE AND THE MEDICAL PROFESSION*

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Although it has been less than twenty years since the first university health service was organized, yet now almost all of the large universities and increasingly more of the small colleges have some such organization. There is a national society for those interested in student health and it has even been suggested that this society publish its own magazine.

And yet most physicians practicing today probably went through college without hearing of such a service, and if they think of it now, possibly regard it as just another useless social agency. Some, indeed, there are who frankly consider it an organization interfering with or even hostile to the regular practitioner.

It is not only possible but probable that the enthusiasm of those interested in this comparatively new field has resulted in some acts unfriendly to those engaged in the regular practice of medicine. But such single acts should no more condemn the movement than should single errors of omission and commission of individual physicians condemn the medical profession. As the loudest critics of medicine, who are sincere and not merely anxious to make money from the sick, are those whose ignorance is most profound about the aims and scope of medicine, so it is felt that lack of accurate knowledge about university health services is responsible for the occasional hostility of those who should be most friendly. It is not, then, to offer an apology for the university health service because of certain good deeds it may do, but rather to show that it is, or may become, an active agency in the promotion of medicine as rightly practiced today, that an attempt will be made to outline the aims and scope of a university health service and to discuss its relation with the doctors of the community.

Before the establishment of the first university health service many large industrial establishments reached the conclusion that it was much cheaper to maintain an active organization of their own to keep their employees well, than to sustain the loss from sickness among their employees. The health service paid for itself by decreasing absenteeism from work and increasing the efficiency of the workers. The same needs, of course, are present in the university group, and the same results may be hoped for. All of the arguments for the provision of medical service to the employees of a large industrial plant, with the possible exception of the obligation to provide for accidents occurring in hazardous undertakings, apply to the university problem. And in addition to sharing with large industries certain needs for adequate health supervision of its individuals, the university community, because of its peculiar organization, has certain additional needs. Three pertinent peculiarities will be considered. These may be considered under the general topics of (1) age, (2) finances, and (3) dormitory life.

The problem of age is much more important than it appears to be at first sight. It is not only or chiefly that boys and girls coming to a university still in their teens are too young to give adequate thought to their health, but rather that they have not been trained to take care of themselves. The change from the dependent environment of the home to the independence of a university is bewilderingly abrupt. When the boy started to school he still lived at home and, if he had gone from high school to a job, he would still have the direct influence of solicitous parents. But now he is far from home and for the first time decisions rest with him alone. As a result of his inexperience and his oft-times mental turbulency, he makes many mistakes. He adapts himself poorly and becomes sick. There is no one to help him take care of himself. In fact, there is not even a place where he may be taken care of. As even the most careful supervision will not prevent sickness entirely, the university which takes these youths must see to it that competent medical attention is available, and that they have a place where they can receive reasonable care. True it is, that in a community as large as Eugene, there are many able physicians but the boy does not know them and hesitates to consult them until long past the time when medical attention was needed. Instead of the physician the boy will, in most cases, prescribe for himself with the aid of a friend or a drug clerk, and a bad habit will be formed.

A second peculiarity of the university community lies in the fact that economically it is unproductive. Objection to the establishment of a medical unit in an industrial plant is often made on the basis that it is better to pay the employee more and have him choose and pay for his own medical care. But students, even from the wealthier homes, feel they can not afford to spend money on a doctor's bill. They hesitate to take money from an allowance which they already consider inadequate or to request more from a parent already approached too frequently. And that very large class of students who are dependent partially or entirely on their own resources, that courageous, ambitious group who get so much out of university life because they put so much into it, that class rightly or wrongly will feel they cannot afford a doctor. At the University of Oregon over sixty per cent are partially self-supporting, and many work four or five hours a day, or even longer.

At the prevailing rate of pay for student help in Eugene, a boy or girl must work six hours and fifteen minutes to pay for one call to a doctor's office, and even then there are not enough jobs to supply the demand. At this rate of pay a girl who washes dishes and cleans house must give two afternoons from one to four o'clock and walk possibly a mile round-trip besides, to earn enough to visit a doctor once, whose chief advice might be for her to get more rest and more nourishing food.

It is not charity but just good business sense for the state to make adequate provision for the health of such young people. Few, if any, begrudge the money spent in infant welfare work, although many of the children saved will without question become a liability to the world. How much more necessary is it to insist that the huge investment of the state in education shall not be wasted by allowing those at state universities who are the potential leaders of the commonwealth to become physically unable to take an active place in the community.

A third peculiarity of the college group may be characterized by the phrase "dormitory life." The word dormitory as indicative of the close herding of university students is used with due regard to its etymologic meaning. Anyone who has been on the sleeping porch of a fraternity or private rooming house and has seen double-deck beds often within a foot of one another, must feel that this constant group life does not end when the class-room or athletic field or club is left behind. It goes on even while the student sleeps, complicating tremendously the problem of prevention and care of sickness. People "catch" sickness as a rule, not from things but from other people. Practically all of the common contagious diseases are air borne. If your son, Jim, in grade school feels badly and has, perhaps, a running nose and weeping eyes, you keep him home from school. If your daughter, Jane, at the university is in the same condition she cannot go home to bed. If she stays at her rooming house, her friends will come and sit on her bed and console her and fuss over her. She probably will enjoy being the center of so much solicitous interest but, if she breaks out later with the rash of measles, a great deal of damage will already have been done. It is this constant, day and and night close association that makes it so important to establish a health service with its easy accessibility, where incipient cases may be recognized and isolated.

ORGANIZATION

The Health Service as a distinct department within the School of Physical Education has proved to be most satisfactory. It has a physician as director who also has the title of Associate Professor of Physical Education. Only a licensed physician is qualified to direct work of this sort, and in the care of the sick only physicians and trained nurses should have a part. But unless this department is directly responsible to some head, it is apt to lose contact with the rest of the university. There is no reason why a nonmedical man should not direct its policies, decide matters of finance, secure cooperation from other departments and assure adequate service. Under the leadership of a dean who is sympathetic with the aims of scientific medicine the health service can be made a part of the university, rather than apart from the university. Its incorporation within the School of Physical Education is most fitting, since one of its important functions is to exercise supervision over the physical activities of the students. This does not mean, of course, that physicians actually direct the work in the gymnasium and on the field, but merely that the decision as to the amount and kind of physical activity which is permissible rests entirely with a physician of the health service.

At the University of Oregon there are three full-time physicians besides nurses and a laboratory technician. There is no rule about private practice but members of the health service have consistently refused to take calls which come to them from time to time from one source or another. The service is supported by fees of the students and is available to them and to employees who may be injured in line of duty. Faculty members ordinarily are not treated except that for the sake of the contacts they are welcomed in for minor ills. Calls are made only in case of emergency and are charged for at the rate of one dollar during the day and five dollars at night. Medicines prescribed, x-ray films or any special treatment, such as a plaster cast, are charged for at cost. Students in the infirmary are given free medicines and board for a period not to exceed four weeks. Students are encouraged to call in any physician they may wish but they must pay for this as for all extra care required, such as that of a private nurse. But students are admitted to the infirmary only by a health service doctor who remains in charge of the case.

In actual practice, however, there has been no difficulty nor, so far as we know, embarrassment resulting from this rule. In occasional severe cases the health service desires consultation and then it chooses the physician and pays his bill. This occurs infrequently. If an operation is required, the patient is urged to choose the surgeon. If he requests a health service physician to recommend a surgeon, usually at least two are named. The number of cases referred is relatively very small. The local physicians have been most generous in serving the students, especially those who are working their way through school, and the protection of the interests of students has given us much less concern than the protection of the physicians who are imposed upon all too frequently.

AIMS OF THE HEALTH SERVICE

Although there is a great diversity to the work of the health service, its activities may be considered under three main headings: (1) The control of the environment, (2) the control of the student and (3) education.

1. The University of Oregon rightly or wrongly has begun its work with the individual and has hoped that a program of inspection of buildings and supervision of the living quarters and eating places of the students would be most effective after the Health Service has proved its efficiency in caring for those who need help. If the community is educated to the point where at least an appreciable number of its members are in sympathy with a program for positive health, then an effort to control the environment of the students will meet less opposition and accomplish a great deal more. At the present time public hygiene and sanitation of the university are being given much consideration and more activity undoubtedly will follow.

2. The control of the student involves the care of the sick and the protection of the well. As pointed out above, unless some special provision is made, a majority of students cannot or will not receive adequate medical care. The state which is paying so much for the students' education has a right to insist that its money be not wasted on those who are, or are likely to become, physically unfit to take advantage of their training. This provision excludes almost none and is instrumental in keeping in the institution many who could not stay without its help. It protects the well student because of early treatment and isolation of dangerous conditions.

3. The educational value of such a service though tremendous is little appreciated even by members of the medical profession. There are formal courses in personal hygiene required of freshmen given by members of the staff or by those in close touch and in sympathy with the Health Service. In addition to this formal class-room education, is the indirect but constant opportunity to stress the need for hygienic living and to emphasize the value of scientific medicine in the prevention and cure of sickness.

RELATION TO COMMUNITY PHYSICIANS

It is hoped that the foregoing discussion of the needs, the organization and aims of a university health service will help the movement to secure that cooperation from the outside physicians so much coveted. In no sense of the word does the health service desire to compete with the man in private practice. Rather it desires to work with and for him. It neither compels nor urges any student to employ its physicians in preference to outside physicians but wherever possible or feasible refers students back to their family doctors. It has urged the faculty to receive a statement for missed classes from a local physician, exactly as they receive one from the health service, and students are repeatedly told that they should consult the physician of their choice.

In the matter of physical education some difficulty is met with because physicians do not realize how carefully this work is graded for those of varying physical ability, and request total exemption from the physical education requirement. This is rarely given but every effort is made to prescribe the amount or type of physical activity taken. There are a large number of students, whose physical ability is not such as to make it seem advisable for them to take the regular class-work. Of those restricted, some may take practically any game activity, such as tennis but they may choose their own time, their own partner and their program is much lighter than that of students in regular classes. Not only are they advised to be moderate but they are individually checked in and out for each period, are weighed and in general are given the personal attention of the instructors. Others of the restricted group are placed in small classes with those of their kind. Still others are given what is called individual work. A student in this class has a special type of exercise or exercises prescribed and is given individual direction. To show how far the Physical Education Department goes in this attempt, it may be said that some individuals do nothing more strenuous than walking, while others indeed are made to rest at regular intervals under supervision.

On admission each student is given a complete examination and this record with that of subsequent visits to the dispensary is kept on file. Infirmary patients have a hospital record as complete as that kept in the better hospitals. When the patient leaves the infirmary, his complete record is filed there and a summary of his case with recommendations is made and filed at the dispensary with his physical examination record. All of this information with the consent of the individual is gladly placed at the disposal of any physician.

What are some of the arguments most commonly heard against the health service idea? Where, as at Oregon, the physicians do not engage in private practice and are not associated with any group, much has been done to answer the charge that the Health Service is being made to serve the interests of a selected few of the physicians of the community. The Health Service does not, and under the present direction will not try to influence students so that all the physicians of the community will have an equal share of student patronage. Rather, it will endeavor to avoid influencing students in their choice of a physician. If it is requested that a physician be recommended, whenever possible, at least two will be named.

One of the most common criticisms is that the health service does too much. There would be no objection, say these people, to a physician acting as general sanitary supervisor, for examining students to determine their type of physical activity and for examining and isolating those who suffer from contagious diseases. To such it need only be pointed out that a health service of that sort does not serve and that unless the student feels it does serve him he will have none of it.

Let us see how that would work. The most important step in the prevention of the spread of contagious disease is early recognition and isolation. Now suppose a student came in with a pain in the abdomen and after a little questioning there was no reasonable indication of a contagious disease. If he were told, "Young man, I can do nothing for you. You are not getting the measles or mumps or something of that sort, so you must go down town," would he not leave in disgust, resolved not to waste his time on a health service of that sort?

Then, some few physicians there are who profess to be in sympathy with this service extended to those only who are financially unable to pay a doctor's fees. That would never be possible. The Health Service is the human maintenance department of the University, it is an economic necessity and not a charitable institution. Indeed, in the democratic community of a state school independent students, no matter how indigent, would hesitate to use a service organized on such a basis. It might be comforting to the physician who believes his practice is unjustly decreased to learn that by far the majority of calls at a dispensary are for trivial conditions—boils, cuts, colds, and kindred ailments—which would never be called to the attention of local physicians. H. S. Diehl, for example, stated that certainly no more than 5 per cent and probably considerably less of the calls made at the dispensary of the University of Minnesota would ever reach the physicians of the Twin Cities. In fact, students are constantly urged to have medical attention for trivial affairs.

Indeed, it is in this very direction that the University Health Service can be signally helpful to the medical profession, for it is inculcating the habit of frequent early use of a physician. Nowhere is there such a golden opportunity to preach the doctrine of "a stitch in time." If university students when sick will go to the drug clerk or "let nature take its course," they will follow the same procedure after they leave the university. But if they can recognize from experience that early consultation with a physician is expedient, then this habit acquired in college will become one of their chief gains and certainly will add to the profit and, what is more important, to the success of the general practitioner.

Furthermore, as students with a slight fever are urged to go to the infirmary, they learn there the benefits of early hospitalization in relatively slight ailments. Especially here in this new country on the West Coast is such a condition most desirable. Eugene is one of the larger communities in Oregon and its people among the most progressive, yet how difficult is it to get its people to recognize the value of hospitalization for all except the most intractable cases. A student who has been in the infirmary with the grip, or with a lymphangitis or possibly simply to get comfort from a poison oak dermatitis will be able to appreciate the suggestion of his physician in later years who advises him to go to a hospital for observation. He will not regard the hospital as a place to go only after death is threatened, a last resort where he may be saved if he is fortunate.

Indeed, all through the work of the Health Service runs the idea of education. Students are encouraged to ask questions and to investigate. What better testimonial can medicine have than the use the university makes of it? Students who ask about various forms of the cults will listen to the university physician as he may not attend to a physician whom he may suspect as being influenced by a desire for a fee. If such a student can be shown that modern medicine is not a jumble of opinions but a science resting upon the sciences of chemistry, physics and biology which he is studying, he will be much more apt to be sympathetic toward medicine. If he gets the conception of the doctor as truly a learned man, as the term signifies, as one who spent many years learning before he tried to do as a scientist whose one demand in his search for truth is proof, then the physician need not fear that that student will later consult one whose only scientific training is in high pressure salesmanship. Certainly it is not claimed that only through the health service and through that alone is the value of medicine taught. But it is believed that the contribution of the health service in this respect is underestimated frequently, especially since it gives not only a medium for expression but actually helps in the inculcation of habits.

The fear that a University Health Service is a step toward state medicine is quite unfounded. Diehl quotes the report of a study made in Illinois in 1923 upon the use made of the medical profession. Of five thousand persons in various economic groups only 7 per cent were in the habit of calling a physician when sick. The other 93 per cent, unless they were about to die, patronized the various cults, took patent medicines or "let nature take its course." As he points out, the danger that citizens will vote to support with their taxes a profession which is used by only 7 per cent of their number would appear very remote. Certainly there is no better way of forestalling such a calamity than by sending out through the state men and women in sympathy with the aims and practices of the medical profession who would see the tremendous disadvantages of such a system.

Are we going to leave to social workers and to nonmedical teachers the entire problem of health education? In our primary and secondary schools more and more attention is being given to health education. In the universities not only are hygiene and sanitation taught but students are trained to take an active part in health work as teachers and social workers. Probably every physician who has practiced for some time has been irked by the misdirected zeal of some social worker or teacher who did not realize his or her place. Probably, too, every lay worker in the cause of better health has been exercised by the obstructionist methods of some few physicians who are not in sympathy with any change, and who do not realize that evolution in medicine is as inevitable as in nature. Is it not the part of wisdom to try to control rather than to prevent this change?

How can the University Health Service help in this necessary adjustment, in bringing about a close cooperation between all of those interested in better health? In the first place, it can point out the fact that the physician is the only man who has been trained in the fundamental sciences. Of those engaged in caring for the sick, he alone has recourse to the facts and methods of science. It can point out that the science of medicine is not limited to drug therapy but to every method which bears the critical light of research. It can further point out that the various cults depend upon opinions, many of which are at variance with simple well-known scientific facts and none of which have been proved by investigation. Unless physicians themselves will call attention to these things, they are in grave danger of being lost sight of.

But probably the most important educational function of a University Health Service is its insistence that diagnosis and treatment of disease are, and must always remain, the problem solely of the physician. Important as the emphasis of this fact is in the personal hygiene class, more important still is the practice of the principle. When, as at Oregon, the coaches of the athletic teams, the instructors in physical education and those interested in training workers in health education, insist that their students report to and follow the instructions of a physician, they are showing their faith in the belief that sickness should be diagnosed and treated only by a physician. But it is only through a health service maintained on the campus that this can be done consistently and persistently.

It is confidently believed that the general practitioner, who understands the organization and aims of a University Health Service and appreciates its educational possibilities, will strive to cooperate with it in every way. If misunderstanding arises in the handling of specific cases, it is not unlikely that the local physician or the University Health Service are not informed as to all the facts in the case. Is it too much to ask that criticism be withheld until an attempt has been made to learn all the facts not only from the patient but from the other physician?

In summary, it may be said that the exigencies of a university community demand a special organized service to look after the health of its individuals. This service is in no sense meant to compete with but rather to supplement the work of the general practitioner. Indeed, it does not serve the student well unless it gives him a better understanding and appreciation of the general practitioner. It offers an opportunity not otherwise afforded for the student to learn by precept and example the proper and important place of the physician in the community.

The University Health Service, therefore, appeals to the practicing physician for support not only because of the immediate health needs of the students but more especially because of the splendid opportunity it affords in education for positive health. It is strategically situated to reach the community leaders of tomorrow and so can, in part at least, meet the need for more widespread knowledge on health matters, for a better understanding of preventive measures and for a keener appreciation and employment of the advantages of early diagnosis and scientific treatment. This is the program of the University Health Service and on this basis it asks for a continuation of the splendid cooperation it has received from the physicians of the city and the state.

ADENOMA OF THE THYROID

ITS CLINICAL AND PATHOLOGIC SIGNIFICANCE*

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The frequency of the use of the term adenoma in the consideration of the clinical and pathologic irregularities of the thyroid gland has attracted the interests of many observers in widely different fields of scientific medicine. Biologists, anatomists, chemists, physiologists, clinicians and pathologists have at various times presented evidence as to the significance of such lesions. Surgeons and internists have used the term loosely in connection with a variety of anatomic distortions of the thyroid and have related to it varying groups of local and remote symptoms.

The term adenoma of the thyroid has been applied to single nodules, multiple nodules, focal enlargements, asymmetrical enlargements, irregularity in the size of the lobes, swellings of the isthmus, luetic and tuberculous lesions and rapidly developing diffuse lesions, hypertrophies of the entire gland. It is a term that has been borrowed from the nomenclature of neoplasms and applied in the broadest sense of the word tumor. Such unrestricted usage of the term has led to much of the confusion in evaluating its character as an entity in the diseases of the thyroid. Studies of the thyroid in so-called exophthalmic goiter are for the most part in agreement, but in all other forms of thyroid disorders confusion arises with each new student of the subject.

Adenoma of the thyroid has been recognized in one form or another even before the gland received its name. Due to the lack of knowledge this gland or its diseases, "swellings of the neck," "bronchoceles" and "strumas" came to the attention of the early physicians because of the mechanical interferences with swallowing and breathing. For the relief of such conditions, caused largely by nodular disorders of the thyroid, about twenty-seven fantastic methods of treatment were employed, while little attention was paid to the nature of the underlying disturbances.

Except for occasional sporadic studies, not much progress was made in the study of the thyroid until the latter part of the eighteenth century. Then all efforts were directed towards an understanding of the nature of cretinism and later the recognition of another type of disturbance, as described by Parry (1779) and later by Graves. A further differentiation of these two opposite types of disease gradually led to the recognition of other pathologic changes that might be basic in producing symptoms, especially in connection with instances of hyperthyroidism.

Accordingly, in the early part of the present century there appeared a number of articles dealing with the relationship of adenoma or adenomatous nodules to the production of symptoms similar to those occurring in Graves' disease. Mayo[1] quoted Plummer as noticing in 1906 that from 17 to 20 per cent of the patients clinically classed as exophthalmic goiter had atypical symptoms and that later (1911) he (Plummer) pointed out the following facts concerning this: (1) That adenomata of the thyroid developed later in life than did Graves' disease; (2) that no matter how intense the intoxication of adenomatous or colloid goiter without hyperplasia, exophthalmos will not develop. Previous to this Wilson[2] showed that in some of these cases a diffuse hypertrophy and hyperplasia, as is seen in the gland in Graves' disease, did not exist.

Following these observations, attention was further directed toward the possibility of so-called adenoma of the thyroid producing an excess of hormone to the end that toxic symptoms might be produced. Plummer[3] (1913) offered the following clinical differentiation between exophthalmic goiter and adenoma with hyperthyroidism: (1) Earlier enlargement in adenoma; (2) time elapsing between the enlargement and the onset of symptoms is nine-tenths of a year in exophthalmic goiter and fourteen and one-half years in adenomata of the thyroid; (3) exophthalmos is absent in adenoma of the thyroid; (4) hypertension and myocardial disease are more often found in adenomata, in addition to the other symptoms of hyperthyroidism; (5) 77 per cent of the adenoma cases are more than forty years old when the symptoms appear, as compared to the majority of cases coming for treatment at the age of thirty-five in the exophthalmic variety; (6) basal metabolic rate drops rapidly after the removal of the adenoma, and slowly after extirpation of the exophthalmic goiter.

In 1916 Goetsch[4], after reviewing the contributions as to the toxicity production of adenoma, and after stating that the histologic criteria for activity are not present in such tumors, nevertheless concluded that mitachondria stains proved the presence of secretory granules in such masses. He further

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* Read before Portland City and County Medical Society, Portland, Ore., April 6, 1927.

Total Number of Thyroid Specimens Entering the Laboratory to Jan. 1, 1927 1624

Total Number Entering With Clinical Diagnosis of Adenoma 642 (31%)

CLINICO-PATHOLOGIC DIVISION OF 300 CONSECUTIVE THYROID SPECIMENS

	PATHOLOGIC DIAGNOSIS						
CLINICAL DIAGNOSIS	NO.	PER CENT	DIFFUSE PAREN. HYPERPLASIA	DIFFUSE ADEN. HYPERPL.	NODULAR ADEN. HYPERPL.	SOLITARY ADENOMA	NEOPLASMS AND INFLAM.
Adenoma	154	51.3+	1	38	74	35	6
Adenoma Toxic	44	14.6+	28	12	4	0	0
Colloid Goiter	12	0.41	0	8	4	0	0
Hyperplastic Toxic	84	28.0	36	39	4	2	3+
Exophthalmic Goiter	4	0.13+	1	2	1	0	0
Carcinoma	2	0.06	0	0	0	0	0

Fig. 1. Illustrating the analysis of adenomata entering the pathology laboratory.

showed that marked clinical relief was obtained when nodules showing such activity were removed. Later Crile[5] (1920) also concluded that the symptoms of hyperthyroidism were probably due to an excessive secretion on the part of the adenomata.

In accordance with this growing notion, that adenoma of the thyroid may secrete an excess of hormone and produce symptoms, are the later views of Wilson[6] who divided adenoma of the thyroid into two groups: "(A) with symptoms of hyperthyroidism (B. M. R. 20+); and (B) without symptoms of hyperthyroidism (B. M. R. 10+)." In the former he claimed to have found histologic changes of hyperactivity, and in 95 per cent of the latter no such changes.

There appeared from time to time other views regarding the toxicity of thyroids in which adenomata were found. The conclusion has been advanced that the hypersecretion in those cases where it occurs is in the parenchyma without, and that the nodules may act mechanically in augmenting the secretion outside. Hertzler[7] (1926) in his study of so-called toxic adenoma concluded that the whole gland was diseased and that, since the toxic adenoma is harmed by the administration of iodine and the Basedow type is helped, gland proliferation is probably not responsible for the constitutional symptoms as has been assumed.

From this brief resume of the literature it is apparent that our knowledge of the clinical and pathologic significance of so-called adenoma of the thyroid has been evolved as a by-product in the study of exophthalmic goiter, and that the question as to its intrinsic ability to produce thyroid hormone is still a subject needing further study; and, further, that its classification as a distinct lesion requires further definition.

During the past fourteen years there have come into the department of pathology 1624 surgically removed portions of the thyroid gland. Of these 642 (31 per cent) entered with the clinical diagnosis of adenoma. Two hundred and thirty-eight of these were classed as adenoma or multiple adenoma; 221 as colloid adenoma; 57 as cyst-adenoma; 89 as toxic adenoma and 37 as fetal adenoma (fig. 1).

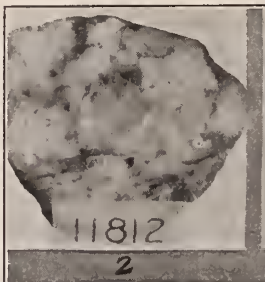
Because of the many different sources of these specimens a detailed clinical study of only 300 consecutive thyroid gland tissues has been possible at the present time. Of these 198 (66 per cent) were accompanied by the clinical diagnosis of adenoma as follows: (1) Multiple or single adenoma, 154 (51.3 per cent); toxic adenoma 44 (14.6 per cent).

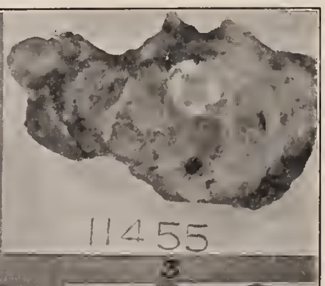
An analysis of the clinical data concerning these discloses 165 (83.3 per cent) of the patients to be over forty years of age. One hundred and fifty-eight were females, and forty were males. The majority of the lesions developed slowly and had an antecedent history of adolescent goiter. In about 54 per cent of the women pregnancies (1 to 5) appeared to have a definite relationship to the onset of symptoms. In about 30 per cent of these miscarriages occurred. The systolic blood pressure varied from 140 to 210. In addition to the other usual symptoms of hyperthyroidism, in the toxic adenoma group, exophthalmos was recorded six times. The basal metabolic rate varied from minus ten to plus eighty. The majority were below forty.

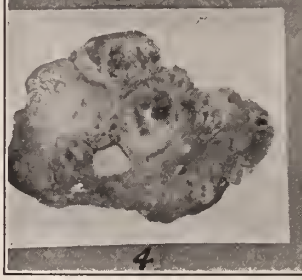
These clinical findings are in agreement with those generally recorded, with the exception of the exophthalmos which is said by Plummer not to occur in adenoma. In these instances in which exophthalmos was found, the adenoma may be regarded as incidental or the other way around, namely, the sudden development of the changes of the so-called exophthalmic goiter type in a nodular, battle-scarred maturing gland. The role of excessive metabolism demand, of child-bearing to the etiology, is as Marine and others have indicated.

Surgically removed thyroid glands have been divided by us[8] according to their gross characteristics into five main groups. (1) The diffuse parenchymatous hyperplasia (exophthalmic) (fig. 2); (2) the diffuse adenomatous hyperplasia (fig. 3); (3) nodular adenomatous hyperplasia (fig. 4); (4) solitary adenomata (fig. 5); (5) neoplasms. The colloid content of each of these is variable. It is least in the first and last (1 and 5) and greatest in amount in the second and third groups. Cystic degeneration, hemorrhage and lime salt deposits occur for the most part in groups three and four. Such retrogressive modifications may be regarded as questions of cell nutrition in greatly modified structural designs. These variations occur in the course of excessive long-continued hyperplasias that result in irreversible lesions leading to nodule formation. The accepted histologic criteria of activity are also variable, being most prominent in the first group and progressively less evident in the others, according to the clinical evidence of the activity of the thyroid in a given case.

On the basis of such gross pathologic changes these 300 glands mentioned above were grouped. The clinical adenomas were divided as follows: Diffuse parenchymatous hyperplasia, 1; diffuse adenomatous hyperplasia, 38; nodular adenomatous hyperplasia, 74; solitary adenoma, 35; neoplasms and inflammation, 6. The toxic adenomas were divided as follows: diffuse adenomatous hyperplasia, 28; nodular adenomatous hyperplasia, 12; solitary adenoma, 4 (fig. 1). This pathologic grouping was made independently of the clinical findings. It will be noted that a large percentage of these glands entering with a clinical diagnosis of toxic adenoma were placed in group 1 or the exophthalmic group. That is to say, one or more variable sized nodules were found in an ischemic, compact, generalized hyperplasia of the gland. Twelve such nodular changes were found in thyroid tissue showing gross spotty hyperplasia. In four such nodular masses were found in an otherwise colloid-containing parenchyma free from discrete hyperplastic foci. Four consisted of discrete solitary nodules with no gross evidence of hyperplasia in the surrounding parenchyma.







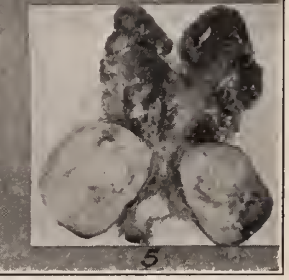


Fig. 2. Photograph of the gross appearance of the thyroid gland in diffuse parenchymatous hyperplasia.

Fig. 3. Photograph of the gross appearance of the thyroid gland in diffuse adenomatous hyperplasia. A tendency to nodule production is evident in this gland.

Fig. 4. Photograph illustrating the gross appearance of the thyroid gland in nodular adenomatous hyperplasia.

Fig. 5. Photograph illustrating a surgically removed portion of the thyroid gland with a solitary fetal adenoma.

Pathologists have generally agreed that there are certain histologic criteria of activity. These are: (1) hypertrophy and hyperplasia of the cells; (2) diminution in the sizes of the alveoli; (3) reduction in intra-alveolar colloid content; (4) the formation of new alveoli; (5) dilatation of lymph channels with round-cell infiltration, and (6) engorgement of blood vessels. That the clinical symptoms vary in direct proportion to the extent of such changes in the thyroid has also been noted. Such cellular changes are, therefore, most marked in the so-called exophthalmic goiter, and least marked in the simple parenchymatous goiter rich in colloid content. Under certain conditions such changes may symmetrically involve the entire gland or be localized in certain lobes or areas.

Microscopic examinations of the instances cited, made with the above criteria in mind, revealed a variety of cytologic and structural changes. Within the adenomata solid cords of cells, such as are found in the parathyroid, were sometimes found with only a small attempt at acinus formation. In these there may be a varying extent of degeneration at the center. The vascularity in these appeared scant. Lymph channels were made out with difficulty. The supportive stroma was scant and the capsule was made up of connective tissue and the alveoli compressed by expansion of the growth. In others the acini were found to be of a more mature type, and as a rule widely separated by a pale pink staining interalveolar substance. No definite relationship to blood vessels or lymph channels could be made out. In the capsule of these nodules round-cell infiltration in addition to structures could be seen. A more typical or pseudocapsule was observed. In some of the adenomata definite areas of hyperplasia and hyperactivity could be defined. Such foci were usually found in the outer zones of the nodular masses. In addition, degeneration, hemorrhage and fibrosis were found. In the surrounding tissues all varieties of cellular changes were noted. Foci of hyperplasia and hypertrophy were as a rule more numerous within the vicinity of the nodule, although they could be found in other parts of the gland (fig. 6).

Our review and study of the subject of adenoma brings out certain agreements and disagreements. There seems to be a universal acceptance of certain clinical facts which were summarized by Mayo[1], namely, (1) that these lesions are late in developing; (2) that there is an antecedent history of goiter; (3) that there is an asymmetrical enlargement; (4) that there is no bruit to be felt in palpating the gland; (5) that the basal metabolic rate is variable; (6) that the metabolic rate when increased is readily lowered after operation; (7) that exophthalmos rarely develops if at all; (8) that hypertension and myocardial disease are more readily found. The evidence in the instances in our series is similar except for the occurrence of exophthalmos in some of the individuals, from whom nodular thyroids were removed.

The best evidence to support the view of toxicity in adenoma has been offered by Goetsch[4] in his mitachondria study of the adenoma and tissue outside of it. The area selected for comparison does not appear to have the histologic evidences of activity. This is of import, since it is known that areas of hyperactivity outside of the adenoma are thought by some to be the source of the hypersecretion. Our studies of the greatly altered pattern of the diseased thyroid structure lead us to an agreement with the views of Hertzler, namely, that the whole gland is more or less disturbed, especially in those instances where multiple nodules of varying size portray a prolonged imbalance of cellular activity and hormone development.

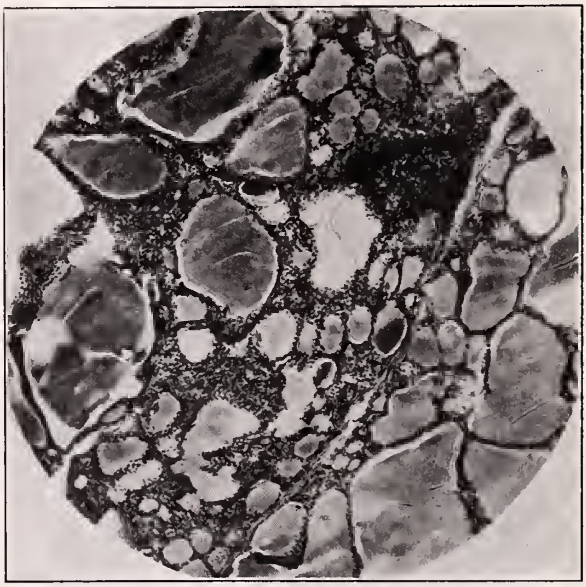


Fig. 6. Photomicrograph of an area of activity in the vicinity of a so-called adenoma of the thyroid.

In the last analysis the hormone production in the normal or the abnormal thyroid depends upon the integrity of the cell. Normally its proximity to the blood supply, its arrangement in the typical acinus, and the amount and character of the extra-alveolar colloid storage are factors that are important in controlling its functional irritability. The evident spotty activity in the thyroid gland points to an inertia of the cells that probably varies in indirect ratio to the amount and physicochemical character of the colloid stored within the alveoli.

Accordingly, marked disturbances in structure in the piling up of cells, alveolar distortion, and the surrounding of groups of acini by excessive connective tissue accmulations must of necessity alter the ability of the involved cells to fabricate hormone and effect a delivery to the proper channels of escape. As has been observed by Goetsch[4] and others, most of the so-called adenomata have histologic structures at variance with the usual histologic criteria of physiologic activity. Wilson[6], however, claims to have found such evidence in those adenomata that were clinically toxic. In our experience most of the adenomata were found structurally incompatible with excessive secretion, while a number of hyperactive foci sufficient to explain the symptomotology were found outside of the nodules; especially in those glands were a single nodule was found.

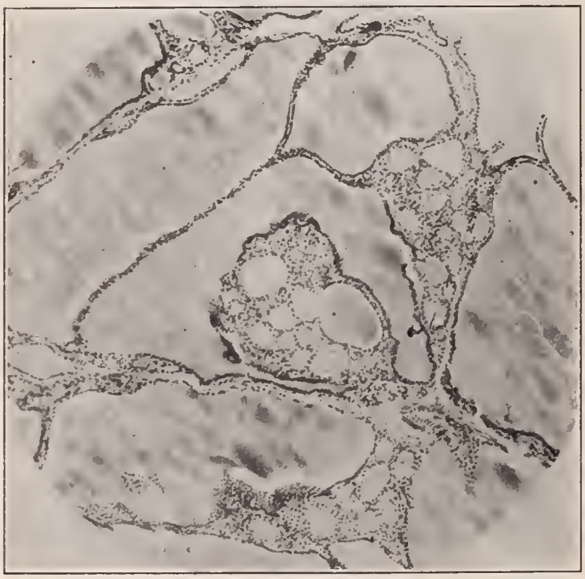


Fig. 7. Photomicrograph illustrating intra- and interacinar production of new alveoli in diffuse adenomatous hyperplasia.

We accept with Cline[9], who recently reported a study of 600 instances, the classical conception of Virchow as to the origin of these so-called adenomas. We regard them, with the exception of the fetal adenoma, as nodular accumulations of thyroid tissue in the sense of hyperplasias rather than neoplasms. The view of Woelfer[10] and others, as to their origin from interacinar embryonic cell rests is not supported in our studies. The relationship of so-called diffuse adenomatous hyperplasia to nodule formation can only be speculated upon. There is evidence to support the view that nodular adenomatous hyperplasia begins in a similar manner. We disagree with the idea that such diffuse adenomatous hyperplasia or adenomatosis occurs solely from the interacinar cell rests, because it is evident, from the numerous sections studied, that wherever hyperplasia takes place and the juxtaposition of cells occurs, new acinus formation may be found (fig. 7). This may be alveolar as well as interalveolar. The mechanism of such alveolar formation has been disclosed by Williamson and Pearce[11]. Although Else[12] has recently pointed out that reconstruction hyperplasia occurs from such rests, our histologic studies of the human thyroids, reveals new acinus formation from both the acinar and interacinar epithelium. It is difficult to accept the notion that such cell masses are carried forward into the adult life of any organ, other than the gonads, for reconstruction or emergency function; and that they alone in the thyroid gland may develop into the so-called adenomata.

CONCLUSIONS

1. The use of the term adenoma in the sense of neoplasm is not justifiable. The term nodular adenomatous hyperplasia is preferable.

2. The conception of Virchow as to the origin of these nodules is accepted.

3. The question of excess hormone production and delivery by such nodular foci in the thyroid is in need of further studies. The mitachondria studies of Goetsch should be extended.

4. A comparison between the clinical and pathologic diagnoses in 300 instances is given, together with the percentage of so-called adenoma among 1624 thyroid specimens.

5. The chronicity of nodule production in the thyroid is borne out.

6. The significance of interacinar embryonic cell rests, as the sole source of hyperplasia in certain types of goiter and in so-called adenoma, is questioned.

BIBLIOGRAPHY

1. Mayo, C. H.: Ann. Surg. 72:134, 1920.
2. Wilson, L. B.: Am. Jour. Med. Sc. 138:851, 1908.
3. Plummer, H. S.: J. A. M. A. 61:650, 1913.
4. Goetsch, E.: Bull. Johns Hopk. Hosp. 27:129, 1916.
5. Crile, G. W.: Ann. Surg. 72:141, 1920.
6. Wilson, L. B.: Am. Jour. Med. Sc. 165:738, 1923.
7. Hertzler, A. E.: Endocrin. 10:175, 1926.
8. Menne, F. R., Joyce, T. M., Von Hungen, A. P.: Arch. of Surgery, 13:329, 1926.
9. Cline, B. S.: Am. Jour. Path. 1:235, 1925.
10. Woelfer, A.: Arch. Chir. 29:1, 1883.
11. Williamson and Pearce: Jour. Path. and Bact. 28:459, 1923.
12. Else, J. E.: Endocrin. 10:165, 1926.

THE BACTERIOGENIC ETIOLOGY OF GOITER*

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Any elaborate consideration of the literature concerning goiter will at once reveal that the subject is in a state of considerable confusion, from which are emerging gradually under modern investigative methods, certain outstanding fundamental facts, recognized and accepted by all. This is particularly true of the etiology of goiter, and especially true of the toxic goiter, in which three salient facts have been determined, viz.: (1) the iodine content of the thyroid secretion is less than normal; (2) the administration of iodine, in suitable preparations, ameliorates the symptoms, but does not cure; and (3) the surgical removal of the thyroid gland usually results in a clinical cure.

Much of the confusion has been due to misunderstanding or misconception through an unsatisfactory terminology and classification, or has resulted from undue speculation, based upon inadequate investigative and experimental work. Recently a satisfactory workable classification of goiter has been advanced by Else, while intensive etiologic studies by Kendall, McCarrison, and others have narrowed down the confusion, and resulted in two schools of thought as to its etiology. One school maintains that the chief etiologic factor is bacteriogenic in nature, the exact identity of the substance being as yet undetermined. The other school maintains that goiter is essentially metabolic in origin, the increase in the size of the gland being an effort at compensation.

Among the predisposing factors now generally accepted are: (1) locality, the disease being particularly prevalent in Switzerland, around the Great Lakes, and in the Pacific Northwest; (2) sex, being seen more often in the female; (3) age, most goiters being observed in the 20-30 years period; and, less certainly, (4) focal infections, and (5) emotional and other factors.

It has been maintained by numerous workers, and especially so since the investigations upon thyroxin by Kendall and his associates, that goiter is an effort at compensation on the part of the thyroid, necessary through a faulty or inadequate iodine content in the food. This is denied by many workers, whose investigations tend to support the bacteriogenic or infectious origin of goiter, McCarrison and Farrant were among the first to offer definite evidence in support of this hypothesis. Gilbride, in attempting to isolate a responsible organism, cultured the thyroids from 14 cases, obtaining organisms in two instances, and these different. Rosenow later was successful in isolating a diphtheroid, nonhemolyzing streptococcus in 25 out of 32 cases cultured in man, and in 8 out of 12 cases in dogs. This organism, repeatedly injected into animals, resulted in the production of toxic symptoms.

More recently Cantero has reported isolating organisms in 47 out of 50 cases studied, using the technic employed by Rosenow. In 31 instances the organism found was similar to that isolated by Rosenow; the remaining 16 were composed of pneumococci, staphylococci, micrococcus tetragenus, diphtheroid bacilli, Welch's bacillus and bacillus pyocyaneus. These were isolated in enriched media of varying oxygen tension. Animal experiments corroborated Rosenow's findings.

It will be noted that the organisms reported by the various workers show a wide range of variation in their identity. This fact would seem to indicate that the occurrence of microorganisms in diseased thyroids is possibly not as significant as might appear at first. In an effort to obtain additional data upon this phase of the question, and to ascertain if the goiter cases in this region showed anything in common with those of other localities in a bacteriogenic way, it was decided to culture a series of twenty-five thyroids removed at operation, in an effort to isolate responsible organisms.

TECHNIC

At all times throughout the series the maintenance of sterile conditions was checked by numerous and repeated controls.

Immediately upon the removal of the thyroids, they were placed in sterile gauze by the operator, and rushed in a warm container to an adjacent laboratory, where they were inoculated into warm media, as described below. Upon the removal of the sterile gauze in a sterile chamber, with sterile instruments, the glands were seared in a flame, and any fluid drawn off with a sterile pipette, and inoculated into the various media. Small excised portions were then inoculated into the various media, and in addition other portions were emulsified, and inoculated into the various media. The warm cultures were then placed in an incubator at 37.5° C. for ten days, being observed daily; during this period, and at the end of the time, they were examined minutely for evidence of growth.

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Number of Goiter	Plain nutrient broth	Glucose broth 0.2 per cent	Infusion broth	Glucose brain broth	Infusion agar tubes	Glucose agar slants	Glucose agar stabs	Glucose agar plates	Glycerine broth	Blood agar plates	Blood agar slants	Blood agar tubes	Brain agar plates	Brain agar slants	Brain agar tubes	Liver agar plates	Liver agar tubes	Gelatine tubes	Anaerobic medium (standard)	Brain broth	Positive controls	Negative controls
1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—
2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—
3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—
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The media used were adjusted to pH 7.0, and had varying degrees of oxygen tension through varying depths. The media used consisted of plain nutrient broth, glucose broth (glucose 0.2 per cent), infusion broth, glucose brain broth (glucose 0.2 per cent, brain varying 2-5 cm.), infusion agar glucose agar (agar slants, stabs, and plates), glycerine broth, blood agar slants and plates, brain agar, liver agar, gelatine and a standard, purely anaerobic medium. Positive and negative controls were run, and in addition calcium chloride, as used by Gilbride, was utilized in several instances. The organisms selected as positive controls were from a case of subacute endocarditis, and did not grow except upon enriched media, and then only after seventy-two hours.

RESULTS

A series of twenty-five goiters were cultured and studied for a period of at least ten days each. All of these were of the toxic type, in which the incidence of bacteria is said to be relatively high.

In every instance both positive and negative controls were satisfactory, but in not a single instance was an organism isolated which could be traced to the thyroid. In one instance, where one lobe of the gland was removed at previous operation and found sterile, the subsequently removed lobe showed a weakly growing staphylococcus albus in three culture tubes. This flourished on subculturing.

CONCLUSIONS

In the series of goiters cultured in this locality the bacteriogenic factor in the etiology of goiter appears to be unsubstantiated.

BIBLIOGRAPHY

Beebe, S. P.: J. A. M. A., 1906, xlvi, 484; J. A. M. A., 1914, lxiii, 769.

Billings, F.: J. A. M. A., 1914, lxiii, 899.

Brown, L. E.: Ann. Otol., Rhin. and Laryng., 1923, 32, 367.

Cantero, A.: S., G. and O., 1926, xlii, 61.

Farrant, R.: Lancet, 1913, ii, 1820.

Gilbride, J. J.: J. A. M. A., 1911, lvii, 1988.

Halsted, W. S.: Am. Jour. Med. Sc., 1914, cxlvii, 56.

Mayo, C. H.: J. A. M. A., 1913, lxi, 10.

McCarrison, R.: Lancet, 1913, i, 365; Lancet, 1914, i, 817; Ind. J. Med. Res. 1916, iv. 183.

Rosenow, E. C.: J. A. M. A., 1914, lxiii, 903; Med. Clin. No. Amer., 1921, v, 573.

Troell, A.: Arch. fur Klin. Chir., 1925, 135:751.

Wilson, A. C.: Brit. Med. Jour., 1925, 1:454.

TABETIC ARTHROPATHY

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Few disease conditions offer such interesting problems for study as does tabes dorsalis. It is so relatively common, the signs so obvious and easily recognized when well advanced that little difficulty is experienced in arriving at a correct diagnosis. At other times, however, it will only evidence itself by one or two of the classical symptoms, but will have some outstanding condition which, on account of its severity and its unusualness, draws our attention from the disease itself unless we are on the alert. This often happens, when one is confronted with a chronic arthropathy with but few of the cardinal signs of tabes.

This condition coming on during the course of tabes dorsalis was first described by Charcot in 1868, and is generally known as Charcot's disease. His description was so clear that little has been added in a descriptive way by later observers, except in so far as the roentgen rays have demonstrated the characteristic bone changes at a much earlier time than is possible by clinical observation. In his original article Charcot states that, "In the arthropathies occurring in the course of tabes dorsalis, the condition comes on without prodromal symptoms and are accompanied by neither pain nor fever." This observation still holds true.

When we consider that tabes dorsalis occurs in from 3 to 5 per cent of all cases of acquired syphilis and that arthopathies occur in from 3 to 5 per cent of all cases of tabes, the condition is not as rare as one would imagine. In 1905, Henderson, from the Mayo Clinic, reported 246 cases. For this reason the condition demands our attention and thought when we are confronted with any chronic arthritis occurring without pain.

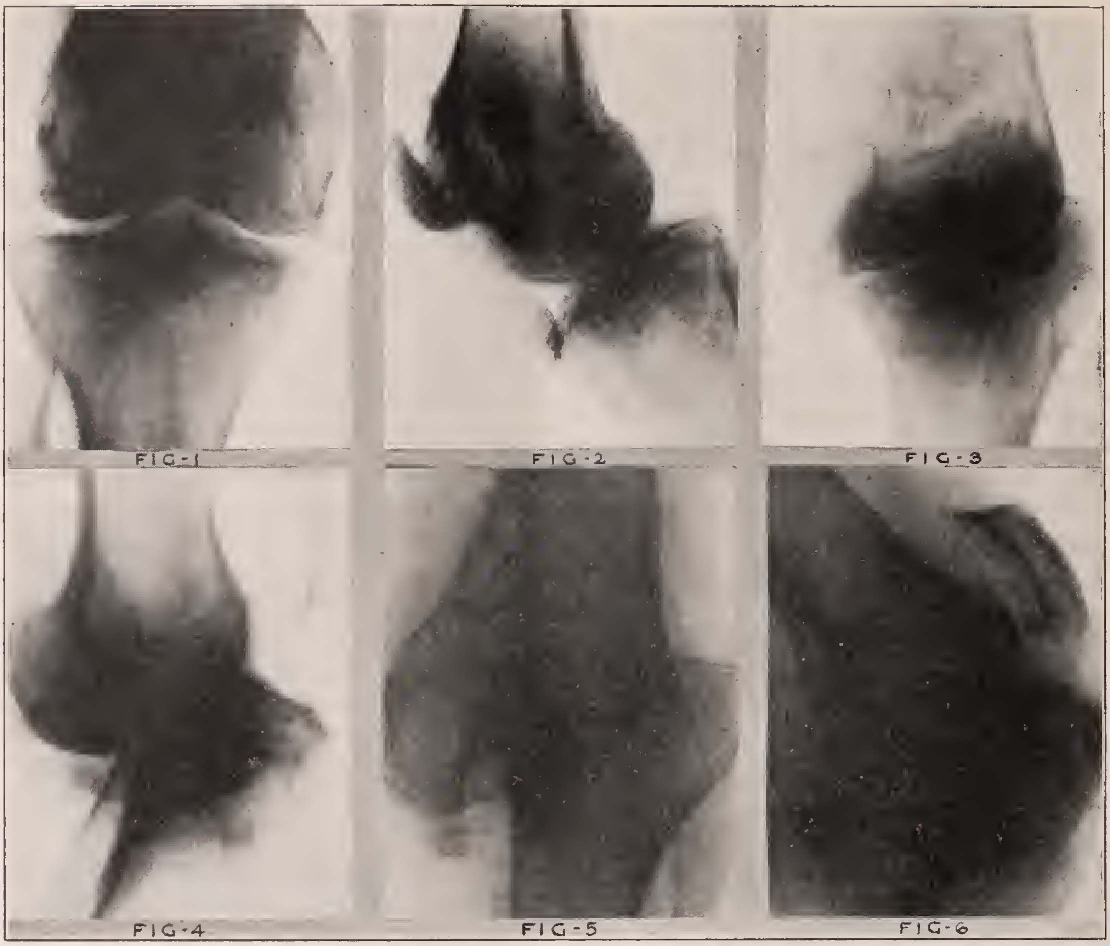
Disease of joints secondary to other forms of disease of the nervous system does occur, being most common as a complication of syringomyelia, but in this disease the symptoms are loss of thermal and tactile sensations, and the joints of the upper extremity are far more often involved than of the lower. In syringomyelia the joint distribution is shoulder, elbow, wrist and hip, while in tabes it is knee, hip, ankle and spine. It is not that we fail to differentiate between syringomyelia and tabes dorsalis, but that we fail to diagnose tabes in the presence of joint changes.

The presence of distributed sensation, lancinating pains, loss of patella reflex, Argyle-Robertson pupil, Romberg sign and ataxia makes the diagnosis of tabes dorsalis without a blood or spinal fluid examinatoin an easy matter, and with some arthropathy present one would not hesitate to designate it as a Charcot joint. But when we consider that a Charcot joint occurs in almost 50 per cent in the preataxic stage, when the only signs and symptoms to guide us may be the loss of reflexes and lancinating pains, it behooves us to take particular note of all joint changes and confirm our suspicions by blood and spinal examination, especially in cases where the joint trouble is attributed to trauma and has practically no pain or fever. Here it is that a careful history and a painstaking examination will establish a correct diagnosis.

It is recognized today that there can be no tabes without an underlying syphilis, and although one must consider the Charcot joint as due to syphilis, it must not be confused with the syphilitic arthopathies that occur in the secondary and tertiary stages of acquired syphilis. The pathologic process taking place in the two conditions are entirely different. The Charcot joint is a disintegration due to a loss of innervation, the result of syphilitic disease of the central nervous system through the trophic nerves, and not due to the direct action of the spirochetes on the joint itself. In this respect it resembles or simulates the chronic atrophic arthritis which we feel is due to the action of some toxin picked up from a focus of infection and, acting through the nerve supply to the joints, produces the characteristic changes.

A tabetic arthropathy usually affects but a single joint, but may affect symmetrical joints. It occurs more often in males than females, probably because there are more male than female syphilitics. There are two pathologic changes occurring in Charcot's disease, one a destruction of the cartilage with a resultant disorganization of the joint proper, often resulting in fractures or dislocations, and the other a constructive process, as is shown by a thickening of the joint capsule, synovial membrane and the synovial fluid, with at times calcareous deposits within the joint.

The objective signs are the swelling due to the effusion, laxity of the ligaments, absence of muscular atrophy, due to the ability of the individual to get about without pain, thus preventing the atrophy that accompanies other joint conditions where pain prevents use, and disuse results in muscular atrophy. The overlying skin is apt to be shiny but not red-



Figs. 1 and 2. Anteroposterior and lateral views of right knee, Oct. 25, 1923. Show marked destruction of joint with fracture of patella but no pain and good function.

Figs. 3 and 4. Anteroposterior and lateral views of left knee, Oct. 25, 1923. Show marked disorganization of left knee.

Figs. 5 and 6. Anteroposterior and lateral views of left knee, Aug. 18, 1926. Show new articulation between tibia and femur with good function and no pain.

dened, the first because of the increased intraarticular pressure and the lack of the second to the absence of inflammation. The subjective symptoms are weakness and deformity.

The diagnosis should be based on the presence of a dense swelling of a joint having little or no pain which shows on x-ray examinaton a marked disintegration out of proportion to the symptoms complained of, further confirmation being supplied by other signs of tabes, including a blood and spinal fluid examination.

Prognosis. Spontaneous arrest may occur. This was noted by Charcot in his original communicaton, but the outlook in general is not good for complete recovery. Much, however, can be done by proper treatment to insure a useful limb.

Treatment. This is divided into two parts, general and local. General treatment consists in the administration of arsphenamine combined with mercury, bismuth, and the iodides, not with the idea of a cure, as these patients may be made serologically negative without much influence on the joint condition, but rather to build up the general condition and prevent, if possible, further advance of the arthropathy. The use of potassium iodide or sodium iodide in ten to twenty grain doses three times a day has been in my experience of great value in all forms of bone syphilis, and is to be recommended in Charcot's disease. The above treatment may be combined with the massive iodide treatment which consists of graduated intravenous injections of sodium iodide, 10 per cent solution, from one to ten grams for thirty injections.

The local treatment consists of protection to the joint by means of a caliper splint, with a lock joint at the knee. This insures stability in walking and at the same time permits flexion when seated.

Ankylosis through arthrodesis has its advocates, but it should be remembered that these joints often remain fibrous after such a procedure and, if successful, a stiff joint results, and since the disease is attended with no pain, stability in walking by means of a splint which allows of flexion when sitting is more to be desired by the patient than stability through an arthrodesis, which does not permit of flexion.

The following case is of interest in that it demonstrates a rather unusual effort on the part of nature to establish a functional joint:

Mrs. G., age 46, married, housewife.

F. H.: Negative.

P. H.: Measles, scarlet fever, and typhoid fever when young. Married at 24. Two miscarriages, no other pregnancies, denies venereal. Habits good.

P. I.: Onset in 1920. First noticed an infected corn, which was treated by a chiropodist for three days. Following this she noticed a swelling of the left knee, on account of which she consulted a physician, who diagnosed the condition as due to kidney trouble. Several other physicians were consulted and the knee treated by various methods, including hot applications, plaster cast and massage, all failing to make the diagnosis of tabes in the presence of the arthropathy. She first consulted the writer in Oct., 1923, when an examination revealed a bilateral swelling of the knee joints with increase of synovial fluid, and a much thickened joint capsule with no pain or fever and a range of motion nearly normal, but attended with marked villous crepitation.

The amount of destruction present with no pain immediately suggested a double Charcot joint. Further study of the patient revealed the following conditions: A 3 plus Wassermann, absence of reflexes, Argyl-Robertson pupil and Romberg sign. The presence of an ataxic gait could not be determined on account of the joint condition. The evidence from physical findings and the x-ray plates was sufficient on which to base a diagnosis of Charcot joint.

Since she had had no active syphilitic treatment, she was given a course of neosalvarsan, combined with intramuscular injections of bismuth over a period of six months, with the daily use of a pill potassium iodide gr. V, and mercury protiodide, gr. ¼, 4 I. D. The treatment by neosalvarsan and bismuth was given, not with the idea of establishing a cure, but rather to build up her general condition which was below par at this time.

Locally she was fitted to a caliper brace with a lock joint for the left knee, and a supporting bandage for the right. Under this plan of treatment she was able to get about at home and do all her house work and in general enjoy a life of usefulness.

A recent visit of the patient, with a request that the calipher brace be omitted, as she finds she can get about without it, discloses a rather unusual condition. The continued destruction of the joint has gone on with the result that the tibial head has been destroyed and has formed a new joint surface with the external condyle of the femur, with perfect range of motion and good stability. The accompanying illustrations demonstrate very clearly the changes which have taken place.

PLASTIC SURGERY: DEPRESSED FOREHEAD FOLLOWING KILLIAN OPERATION. REPAIRED BY FAT GRAFTS.

John H. Harter, M.D.
SEATTLE, WASH.

A preliminary report of this case has been published.* The reason for reporting the case in full is that I have been unable to find in the literature any report of a similar case.

Subcutaneous fat grafts have been used to fill in depressions of various parts of the body. The fat graft is eventually transformed into fibrous cicatricial tissue with disappearance of fat cells. Probably the reason such grafts have not been used to fill in the depression of forehead following Killian operation is because of fear of exciting further frontal sinus trouble.

It would seem inadvisable to attempt such correction, if there were purulent discharge from the nasofrontal duct. However, with proper technic the grafts are subcutaneous and not anatomically connected with the nasal cavity.

CASE REPORT

Mr. W. P. V., aged 29 years.

History: Had a double Killian frontal sinus operation in 1921. This cured a severe purulent nasal discharge but left marked deformity.

Examination: Badly deformed and depressed forehead. The frontal sinuses had extended almost to the hair line and had been deep in anteroposterior diameter. Scars in both eyebrows; that in right brow about 8 mm. wide. Median vertical scar connecting with mesial end of scar in right eyebrow.

Intranasal examination shows no pus present. Mucous membrane appears normal. Blood Wassermann negative.

August 15, 1925, under local anesthesia scar was excised from right eyebrow. Scar in left eyebrow reopened and these two incisions joined by incision carried across root of nose. Skin was raised to the lateral limits of deformity and above to the hairline. A piece of fat and fascia slightly larger than the defect was removed from the abdominal wall and inserted into defect. This was anchored above by sutures through skin. Closure of incisions with horse hair.

Following this operation there was some discharge of fatty fluid over period of nine weeks from sinuses in the incision. After healing, most of the fat had graviated to lowermost portion of defect, as shown in illustrations.

March 27, 1926. Fat-graft about 2x3x4 cm. placed in defect to left of midline, second 2x2x3 cm. just above lateral portion of right eyebrow. Healed in five days.

June 2. Three small fat-grafts inserted beneath depressions. Healed in ten days.

August 27. Vertical median forehead scar excised. Small fat-graft inserted just above right eyebrow. Healing uneventful.

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*Plastic Surgery. Faciomaxillary. North. Med., Aug., 1926.

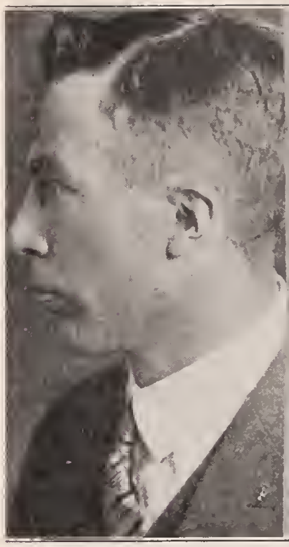

Fig. 1.
Before operation.

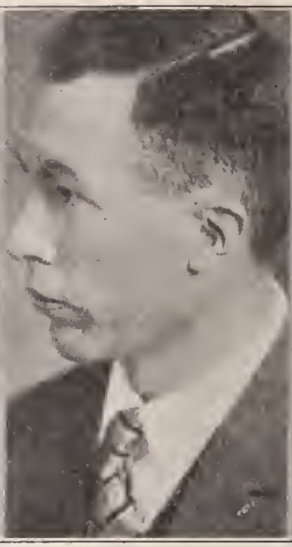

Fig. 2.
After first operation.

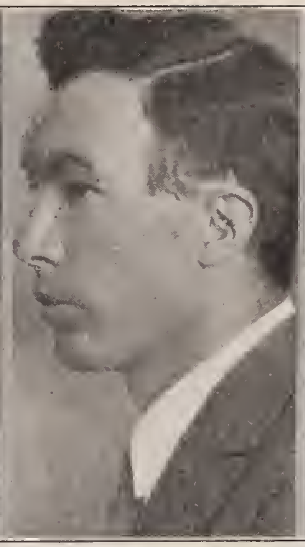

Fig. 3.
After third operation.

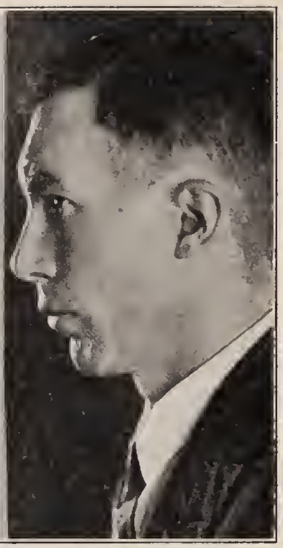

Fig. 4.
After fourth operation.

Comment. The cosmetic end-result in this case is far from perfect. There are still scars in the eyebrows and in the midline of forehead. Some small depressions are present between the fat-grafts. However, the repulsive appearance of the depressed forehead has been overcome and the photographs show plainly that the patient begins to appear more intelligent as the forehead is raised.

This man tried for several years to find a congenial occupation but could not. He has studied salesmanship and likes to be among people. The only employment he seemed able to obtain was farm labor and he did not like this. Since repair of the forehead he has obtained a position as salesman and is making good. He is quite happy about this and his outlook upon life is entirely different.

CONCLUSIONS

1. Depressed forehead following Killian operation can be cosmetically improved by insertion of fat-grafts, provided the nose is free from purulent discharge.

2. Fat-grafts not much larger than one inch in any dimension seem advisable. These small grafts shrink but little and heal in without leakage of fat and possibility of infection.

3. The following order of procedure has been found helpful. First, undercut the tunnel for reception of fat-graft. Pack this snugly with gauze. Next remove fat-graft from abdominal wall or elsewhere and insert into tunnel. The packing of tunnel with gauze while fat-graft is being removed gives a dry field for the graft.

TETANUS. It is becoming easier than ever before to give a child a hypodermic of Tetanus Antitoxin, now that this biological product has been purified and concentrated to such an extent that 1500 units (the prophylactic dose) resembles nothing so much as a few drops of pure water. Vast improvements have been made in the physical properties of Tetanus Antitoxin since the product was first made available to the profession, and with this improvement in form has gone a constantly increasing use in caring for suspicious wounds.

Doses as high as 20,000 units, for treatment, are now offered, in a volume no larger than that of the 10,000-unit dose of a few years ago; and from this point down to a 3000-unit dose.

See the advertisement in this issue headed "Tetanus Antitoxin (P. D. & Co.)—Potent, Refined, Concentrated." It will well repay perusal.

CHOLECYSTOGRAPHY AND PATHOLOGIC CHANGES IN GALLBLADDER. After comparing the roentgen-ray observations after the administration of tetraiodophthalein with the pathologic observations in fifty consecutive cases in which cholecystectomy was performed, L. R. Chandler and R. R. Newell, San Francisco (Journal A. M. A., May 14, 1927), conclude that: Cholecystography is capable of considerably improving the diagnosis of gallstones. A normal cholecystogram does not necessarily mean a normal gallbladder. Failure of the gallbladder to visualize even after intravenous administration of the dye may occur with a nearly normal mucosa and in the absence of gallstones. Smoothness or irregularity of the gallbladder shadow does not correlate very well with absence or presence of gallbladder adhesions. Failure to empty after a fatty meal is probably a sign of disease.

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of the Pacific Northwest

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JUNE, 1927

EDITORIAL

PREVENTION OF INFANTILE TUBERCULOSIS BY VACCINATION

The marked susceptibility to tuberculosis shown by infants and young children who are in close contact with the disease, together with the severe course and frequent fatal termination in those infected have long been recognized. Although the practice of removing newborn infants from tuberculous surroundings has diminished considerably the number of infections, this method cannot be expected to eradicate the danger entirely. It is not surprising, then, to learn that several of the earliest and most celebrated investigators have directed their attention toward devising successful methods of vaccination against tuberculosis. These have been repeated by later workers up to the present day in increasing numbers.

In an extended review of the subject, Long[1] reiterates the modern concept that adult resistance to tuberculosis is the result of childhood infection. Nature's method has proved so efficient that, out of ten infected, only one succumbs to the disease. One hesitates to employ an immunologic method which may prove more harmful than the policy of allowing nature to take her course.

The introduction of tubercle bacilli killed by heat or by chemical agents has been considered less dangerous than the employment of living organisms. Theobald Smith in 1904 was the first to use dead bacilli for this purpose. There have been repeated attempts since. In general the results have proved disappointing. Although hypersensitiveness usually develops, this is not held to be synonymous with immunity. There is a growing belief that dead tubercle bacilli are not capable of conferring adequate or lasting protection against the disease.

The use of living tubercle bacilli for immunization has long been maintained by many to be the only solution of the problem. However, the thought of inoculating healthy human beings with an organism of pronounced pathogenic properties has not been considered lightly. To quote Long, "Few investigators have felt justified in usurping a role which nature handles with success in 90 per cent of cases." Hamburger in 1909 advised that children in consumptive families be injected with attenuated tubercle bacilli, as this would be preferable to inevitable massive infection. A few apparently successful experiments on children were subsequently carried out by other workers, but the series were too small to justify final conclusions.

Outstanding in several respects is the experiment in human immunization by living tubercle bacilli which is now being conducted by Calmette of Paris and his coworkers. This distinguished investigator began his work on animals twenty years ago. After thirteen years of effort he succeeded, by repeated culture on a glycerolated potato-bile medium, in obtaining a strain of bovine tubercle bacillus which in his opinion was completel avirulent and yet capable of producing immunity. In 1921 he began on a large scale the immunization of newborn infants. His method consists of the peroral administration of his vaccine, named "BCG," to newborn infants on the fourth, sixth and eighth days of life. Vaccination with BCG is now being widely employed in France and other European countries. Previously, the infant mortality from tuberculosis in France, following contact with the disease, was estimated roughly at 25 per cent. With the use of BCG, Calmette claims that this has been reduced to less than 1 per cent. He believes that the immunity conferred persists at least well into the second year of life. He regards his method as still on trial and recommends that at present its use be confined to contact cases.

Naturally the work of Calmette has not gone uncriticized. Kraus[2] has questioned his assertion that BCG is completely avirulent. In order to determine this point, he inoculated a series of guinea pigs with the vaccine. He was later able to demonstrate tubercles containing acid fast bacilli, indicating that BCG has some degree of virulence. He found, however, that the lesions were of a benign character and that they subsequently healed. Kraus cautions against a too early general adoption of Calmette's method. The medical profession anxiously awaits the final decision of Calmette and his critics. It sincerely hopes that BCG will solve the problem of the eradication of tuberculosis in early life.

BIBLIOGRAPHY

1. Long, E. R.: J. Prev. Med., 1:31, Sept., 1926.

2. Kraus, R.: Wien. klin. Wchnschr., 40:49, Jan. 13, 1927.

THE AMERICAN MEDICAL ASSOCIATION CONVENTION

Making a report of a meeting so large as the seventy-eighth annual session of the American Medical Association, which began May 17, at Washington, D. C., is about like a soldier giving his personal experiences of a great battle that has been fought. To be present at a meeting where approximately seven thousand medical men attend, a majority of which are so interested in medicine that they have left active practices many miles away, cannot help but inspire one with enthusiasm and a desire to return home and do better work.

The opening exercises of the 1927 meeting began at the Arcadia Auditorium, May 17, at 8:30 P. M. The hall, which held approximately ten thousand people, was packed an hour before the meeting opened and at the appointed time there were practically ten thousand people on the outside who were unable to attend. After much music and applause the meeting was called to order by President Dr. Wendell C. Phillips of New York. There followed an address by his Excellency, the President of the United States. It was the unanimous opinion of all present, no matter what politics they followed, that with the knowledge of the present needs of medicine that Mr. Coolidge has, had his early training been towards medicine, he would have been one of the great leaders of medicine today. Following this there was an address of welcome by Dr. Charles S. White, President of the Medical Society of the District of Columbia. Dr. Jabez N. Jackson, of Kansas City, Missouri, was then introduced and installed as president of the Association for 1927. Doctor Jackson's presidential address is well worth reading, and is entitled, "Medicine, Its Accomplishments and Its Needs." Doctor Jackson's remarks on the contributions of medical and surgical science, the new standards of service based on progress of science, the shortage of physicians in rural communities, the need of endowed hospitals are well worth reading, and will undoubtedly appear in the Journal of the American Medical Association within the next few issues.

Before the House of Delegates, one of the much-talked of addresses was that given by Dr. Wendell C. Phillips, in which he touched upon Medical Liquors, calling attention to a recent article, "Shall Congress have power of life and death over the sick," which was written recently by a group of medical men, including the executive committee of the Association for the Protection of Constitutional Rights. The article was published in a recent issue of the Journal. In quoting from this article Doctor Phillips brought a serious look upon every face in the house when he read: "Not even the middle ages may boast of a greater triumph of legislative imperialism over the methods and achievement of science. Congress included medical restriction in the Volstead Act in contravention of a promise to the nation by the Senate Judiciary Committee that the use of alcohol as a medicine would not be interfered with."

Scientific exhibits seemed to be greater this year than ever before. The program was divided into four parts. These exhibits covered a space in a very large building of three floors. It was an education to attend these exhibits which were classified as (1) special, (2) pathologic and laboratory, (3) surgical and radiologic, (4) dermatologic and syphilitic, (5) urologic (6) government and education (7) departments of the American Medical Association. On the top floor of this building, a very large amphitheatre, there ran from nine A. M. to five P. M. daily, a program of motion pictures, in which large numbers of the leaders of medicine of this country talked for a half hour at a time.

The scientific assembly began its meeting Wednesday and continued through until Thursday afternoon. There are at the present time fifteen sections. The three sections in which a large attendance is always found are the Practice of Medicine; Surgery, General and Abdominal; and Obstetrics, Gynecology and Abdominal Surgery. It was impossible for anyone to attend more than two sections a day.

A brief report on the section on Surgery, General and Abdominal, may be interesting. This section met each afternoon at 2 P. M. in the Memorial Continental Hall, which is owned and operated by the Daughters of the Revolution. In the ten years that we have had the pleasure of attending these association meetings, this is always the best hall for the meetings that we have seen. Doctor Frank H. Lahey, of Boston, is secretary of the Surgical Section this year and if one were to look the country over again, it would be hard to secure a secretary as efficient and energetic as is he.

The first paper was by Dr. Robert B. Osgood, of Boston, on "Diagnosis and Treatment of Compression Fractures of the Spine." He reported two hundred twenty-two spinal fractures from the Massachusetts General and Boston City Hospitals and called particular attention to the fact that in early cases patients usually were restored to full wage earning capacity by adequate non-operative procedures. Late cases may be restored by non-operative methods, but operative methods were more often justified. A paper by Dr. Nathaniel Allison was entitled, "Diagnosis and Treatment of Fractures of Lower Extremity of the Humerus." He called attention especially to the fact that elbow fractures are potential causes of serious peripheral nerve paralysis. Dr. William Darrach, of New York, discussed "Diagnosis and Treatment of Fractures of the Lower Extremity of the Radius." He gave particular attention to the consideration of end results, which usually depend upon the importance of small details in treatment. "Diagnosis of Fractures of Os Calcis" was discussed by Dr. Philip Wilson, of Boston. The gist of his paper was: "The involvement of the calcaneo-astragalar articulation is an almost constant accompaniment of fracture of the os calcis. This gives rise to traumatic arthritis and is the cause of prolonged pain and disability. Arthrodesis of this joint cures this condition and is a proper procedure to be employed in fresh cases with obvious joint change, and in old cases with continued pain. The report is based on a study of twenty-six cases which have been treated in this manner.

The second day of the program included an address by the chairman, upon "The Trend of Surgery." There was a paper on "Meningeal Irritation Resulting from the Extravasation of Blood in the Subarachnoid Space," by Dr. Charles Bagley, Jr., of Baltimore. He believes that a small amount of blood mixed with cerebrospinal fluid, rather than the blow, is responsible for symptoms. A moving picture was given of a number of animals who had had extravasation of blood in the subarachnoid space. A paper on "The Early Diagnosis and Surgical Treatment of Bronchiectasis" was read by Dr. Carl A. Hedblom, of Chicago. Great stress was placed upon the fact that iodized oil bronchography not only establishes a diagnosis of bronchiectasis, but makes possible the certain recognition of unilateral and bilateral involvement, type and localization of the disease. "Colostomy and Posterior Resection for Carcinoma of the Rectum" was taken up by Dr. Fred W. Rankin, of Rochester, Minnesota. The paper was a statistical study of a group of cases in relation to the operative mortality, morbidity and end-results following primary colostomy and resection.

A paper on "Partial Gastrectomy" was read by Dr. J. Shelton Horsley, of Richmond, Virginia. It included a brief review of some of the methods of partial gastrectomy. There was a discussion of objections to the original Billroth I operation and description of a modification similar to Horsley's original operation some years ago of pyloroplasty. This would seem to obviate these objections. A brief report of the patients that have been operated on according to this technic, and detailed description of one or two cases of unusual interest were given.

Dr. Donald C. Balfour, of Rochester, Minn., discussed "The Treatment of Lesions of the Stomach and Duodenum Associated with Hemorrhage." This described the surgical procedures employed to prevent further hemorrhage and called attention to the fact that all hematemeses were not from a bleeding ulcer of the stomach or duodenum, but might result from other conditions, particularly at the lower end of the esophagus. The last paper of the day was "Diaphragmatic Hernia," by Dr. John Homer Woolsey, of San Francisco, California. This consisted of a study of literature since 1910, concerning cause and location of several types of diaphragmatic hernia. There were illustrations showing the embryology of the diaphragm, the composite location of each of the three forms of diaphragmatic hernia, the conditions found at operation and the postoperative results of some of the author's cases.

On the last day of the meeting there was a paper on "The Surgical Treatment of Goiter with Hyperthyroidism," by Dr. E. R. Arn, of Dayton, Ohio. He discussed the use and abuses of iodine. He considered diet in preparatory treatment of questionable value. He called attention to the fact that the mortality was mostly in cases of adenomas with organic lesions of the cardiovascular system. The second paper was "The Regeneration of the Thyroid Gland and the Prevention of Recurrent Goiters" by Dr. J. Earl Else of Portland, Oregon. There was a review of the literature on hyperplasia following partial thyroidectomy, experimental work on two series of dogs with and without iodine; thyroid sectioned at time of removal by operation, and at time dogs were killed. Study was made of groups in which nothing was done to prevent recurrence, and in which iodine was given for one month after operation. Dr. Martin B. Tinker, of Ithaca, New York, discussed "Some Surgical Problems of Thyroiditis." Special attention was called to the difficulty with which diagnosis for malignant growths may be differentiated from thyroiditis. In doubtful cases of small, hard thyroids, excision should be done, especially if there is any hoarseness.

"Management of Acute Conditions of the Abdomen Complicated by Marked Ileus from Septic Invasion of the Peritoneum" was treated by Dr. Donald Macrae, Jr., of Council Bluffs, Iowa. He called attention to the fact that high enterostomy alone in desperate case may save life. No drainage is necessary in perforations when operation is done very early. There was a paper on "Jejunostomy: Technic and Indication for This Life-Saving Operation" by Dr. A. I. McKinnon, Lincoln, Nebraska. He presented observations from personal experience in more than five hundred cases in the last eleven years. The value of jejunostomy in late cases of ileus of every type, in which no other surgical procedure is permissible, plus local anesthesia, was dealt upon at some length. "The Noncalculous Gallbladder" was discussed by Dr. George Muller, of Philadelphia. He dwelt upon the fact that increased experience points to the fact that cholecystectomy for the noncalculous gallbladder is followed by a large percentage of failure to cure. This problem is somewhat similar to that of appendicitis. He plead for the need of discrimination.

The last paper on the program of the Surgical Section was "The Clinical Results in the Use of Dead (Preserved) Fascia Grafts for Hernia Repair" by Dr. Amos R. Koontz, of Baltimore. He showed that the preserved graft took just as well as living grafts. Microscopic sections showed that dead cells were carried away by wandering cells of the host, the remaining connective tissue framework became repopulated with living cells, the graft became vascularized, and in a short time it could not have been told whether the graft was originally living or dead. The author has now successfully operated on ten hernias in the human being, some of which were very difficult, using alcohol preserved strips of dead fascia as suture material. This material has the advantage of not being absorbed, but becomes intimately organized with the tissues of the host, producing an exceptionally strong wall.

We have no doubt that every other section was as interesting and probably had as many visitors as the Surgical Section and it is with a great deal of disappointment on our part that we were unable to attend more than one section, but we can assure the men who were not present that if they will go to one of these meetings and attend faithfully one section, once a week, they will feel that they have done their duty well in regard to the meeting, because one is completely fatigued at the end of the week.

THE BOISE MEETING

The attention of physicians planning to attend the meeting of the Pacific Northwest Medical Association at Boise, June 27-29, is called to the fact that it is highly desirable to make early reservations. The fifteen dollar registration fee should be sent to Dr. Frederick Epplen, 422 Paulsen Bldg., Spokane, and an identification certificate requested. This will enable one to take advantage of the special railroad fares which have been granted.

A special train will leave Seattle at 9:00 A. M. Sunday, June 26. It will depart from Portland at 3:00 P. M. the same day, arriving in Boise at 8:00 A. M., June 27. Those who intend to use this train should notify Dr. Alexander B. Hepler, 555 Stimson Bldg., Seattle, or Dr. J. Earl Else, Medical Arts Bldg., Portland. Hotel accommodations may be secured by writing to Dr. James L. Stewart, Boise, Idaho.

THE STATE ASSOCIATION MEETINGS

During recent years, when the profession of our Northwestern cities have been favored by the magnificent programs presented at the meetings of Pacific Northwest Medical Association, the statement has frequently been made that the importance of these gatherings would tend to depreciate the state association meetings and minimize their importance. It does not seem that this result has followed, in spite of the pessimistic predictions. There is little ground for such fears this year since the larger meeting is scheduled for June 27-29. The meetings of the Washington and Idaho associations occur simultaneously August 29-31, that of the Oregon Association following September 1-2. Details concerning these state meetings will appear in our July and August issues.

PASSING OF PIONEER PHYSICIANS

In cities of the Pacific Northwest for many years there have been physicians, whose lives, paralleling the growth and development of their cities, have intimately affected not only medical but civic affairs. The immutable laws of nature are decimating their number and terminating their earthly careers. It is fitting that special reference should be made of two of these who have recently gone to the great Beyond, whose lasting impressions on their associates have been noteworthy.

Dr. George M. Horton lived all but the first five of his sixty-two years in Seattle. He had the unique experience of participating in its progress from a village of a few hundred inhabitants to one of the large, progressive cities of the land. His memory will be perpetuated in Georgetown, named for him, located on the site of his father's farm, which was formerly an incorporated municipality but during recent years has been a part of greater Seattle. Except for the years of medical study in Bellevue Hospital Medical College, New York, his schooling was obtained in his home city. While the medical student's education is incomplete today without hospital training, this was not considered essential thrty-five years ago. Immediately after graduation he began practice in Seattle. The preeminence to which he attained is indicative of the endowments with which nature favored him, fitting him so thoroughly for his chosen profession. While for many years he was the typical general practitioner, effectively covering most branches of medicine, it was as a surgeon that he became most distinguished. From a clientele that provided a vast experience he developed that operative speed and skill which, combined with accurate knowledge and good judgment, produce great surgeons.

During his years of practice was developed the group system, but combinations and clinics were not to his liking. He was an individualist and was always jealous of his own responsibility for success attained. Thus in time he became an institution, whose fame was widespread and commanded a following from distant sections. While he never had a professional office associate, he was always aided by an assistant in his operative work. A number of the leading practitioners of the city profited during their earlier years by this relationship which afforded a varied and valuable clinical training. Thus he was ever alert to render suggestions and assistance to younger physicians, which helped to endear him to them and renders keener the loss sustained by many.

One of the most valuable assets of a medical career is the affectionate regard in which the physician is held by his patients. Toward Dr. Horton this trait was exhibited in a marked degree. This was enhanced by his lifelong custom of exercising personal contact with his patients. His office was daily crowded with rich and poor, seeking the benefit of his skill and to each he devoted equal attention. Numerous were his associations with professional, fraternal and civic organizations. The unusually large assembly, gathered for his memorial service, testified to the esteem in which he was held by his fellow citizens in all walks of life. His own family, the medical profession and the city, in whose activities he was a conspicuous citizen, lament his departure and will retain his memory in perpetual affection and esteem.

Dr. J. R. Brown died of coronary thrombosis after only a few hours terminal illness on May 7, 1927, at Tacoma. On that day the medical profession of the Northwest, and of Washington particularly, lost one of its noblest souls. Dr. Brown, or "J. R.," as his friends all called him, during his years of practice in Tacoma, endeared himself to his associates by certain definite outstanding characteristics worthy of emulation by us all. Of these it would be difficult to name any one which was foremost for in a great measure he was endowed with all the good found in man. He was charitable. No one can recall his ever speaking ill of another. On the contrary, his was an understanding heart, enabling him to see the good in others and to help them. He was kind, always ready to render service to his conferees and humanity without stint and with little thought of pecuniary reward. In fact, "J. R." found it difficult to reconcile himself with the increasing tendency to commercialize the medical profession. He was a godly man, living a truly Christian life, active in his church. His last words were, "I am prepared."

He was a man of high professional attainments. At one time a college professor, he had the ability to study and his brain was a vast storehouse of medical knowledge. His friends often spoke of him as "the oracle." He was a versatile man. His reading covered a wide range and there was scarcely a subject upon which he could not speak most intelligently and convincingly. Finally, he was a lovable man, his family life exemplifying to its finest degree that reciprocal devotion so wonderful but now-a-days so rarely found. The hospitality of his home has been accepted and appreciated by all the local members of the profession. He was a man's man and loved by all.

MEDICAL NOTES

OTO-OPHTHALMOLOGISTS TO CONVENE. The fifteenth annual meeting of Pacific Coast Oto-Ophthalmological Society will be held at Spokane, Wash., June 6-7. Examinations of the American Board of Ophthalmic Examinations and of the American Board of Otolaryngology will be held during the convention. Among others, the following guests will deliver addresses: Dr. Walter B. Lancaster, Boston, ophthalmologist of the Massachusetts Eye and Ear Infirmary; Dr. Allen Greenwood, Boston, professor of ophthalmology at Tufts Medical College; Dr. Jas. M. Patton, Omaha, Neb., professor of ophthalmology, University of Nebraska Medical College; Dr. Ross

Skillern, Philadelphia, University of Pennsylvania Graduate School of Medicine; Dr. Harris P. Mosher, Boston, professor of otolaryngology, Harvard University Medical School; Dr. R. C. Lynch, New Orleans, professor of otolaryngology, Tulane University; Dr. Burt R. Shurley, Detroit, professor of rhinology asd otolaryngology, Detroit College of Medicine and Surgery. Dr. Carroll Smith, Spokane, is president of the society.

Urologists to Hold Clinics. The western branch of the American Urological Association will hold a series of clinics, including operative demonstrations, July 5, at St. Vincent's Hospital, Portland. The clinics will be repeated at Seattle July 6, at the Providence Hospital, and at Vancouver, B. C., July 7, at the Vancouver General Hospital.

OREGON

Medical School Receives Appropriation. The General Education Board of New York City recently announced an appropriation of $130,000 for the University of Oregon Medical School. The funds will be used to meet the current departmental expenses. In addition, $4000 will be available for development of the medical library.

Tuberculosis Expert Visits Oregon. Dr. John A. Smith, New York, medical secretary of the National Tuberculosis Association, spent three days in Oregon in the latter part of April. He conferred with officials of the Oregon Tuberculosis Association at Portland. Later he visited the state tuberculosis hospital, Salem, and the site of the proposed Eastern Oregon tuberculosis hospital at The Dalles. Although he felt that remarkable progress has been made in the care of the tuberculous in Oregon, he expressed the opinion that further expansion of facilities for institutional care will soon be needed. He stated that the next step should be the construction of a state tuberculosis hospital in Portland.

Appointed County Physician. Dr. Thurston Laraway, formerly of Veronia, has been appointed county health officer of Douglas County. He succeeds Dr. Richard Thompson.

Central Willamette Medical Society held a meeting May 5 at Eugene. Dr. Lyle Kingery of Portland gave an address on dermatology. Dr. Raymond E. Watkins, Portland, discussed "Uterine Hemorrhage."

Dr. Adelaide Woodward, superintendent of Memorial Hospital, Feteghar, India, was a recent visitor in Eugene. ,

Dr. H. L. Kennedy, who has been engaged in practice for the past two years at North Bend, has moved to Shelton, Washington, where he has become associated with Dr. O. F. Lamson.

WASHINGTON

Mass Meeting of Health Workers. Eight hundred physicians, hospital and public health nurses and interested citizens attended a mass meeting held in Seattle, May 7. The purpose of the meeting was to crystalize sentiment for building a county-city hospital at an early date. Rev. Mark A. Matthews, chairman of the Seattle Chapter American Red Cross, referred to the present King County Hospital as "an old dirt hole." He stated that "the hospital situation in King county is a disgrace," and declared that there is an imperative need for a $5,000,000 bond issue to provide for a new hospital of at least five hundred beds. Mayor Bertha K. Landes advocated that the new institution be removed from the control of politics and placed in the hands of an independent board of directors. Dr. George Swift charged that the high cost of private care in the various hospitals of Seattle is in part due to the burden of charity patients which they must of necessity provide for. Much of this burden will be relieved by a new county-city institution.

Milk Bill Amended. The milk bill proposed before the Seattle City Council by Dr. E. T. Hanley, Commissioner of Health, was recently passed in a considerably amended form. Dr. Hanley asked for an ordinance which would provide that milk used in Seattle be either pasteurized or certified. Dealers in raw milk were successful in securing amendments which permit the sale of uncertified milk, providing that certain requirements for tuberculin testing of cows are complied with. Local health authorities allege that these tests are a duplication of those made by the state and consequently are an additional burden to the taxpayers.

International Medical Golf Meet. Medical golfers of Seattle were guests of Vancouver and Victoria physicians at a golf tournament, held at the Colwood Golf Club, Victoria, B. C., May 14. The tournament culminated in a banquet at the Pacific Club.

Appointed County Health Officers. Dr. C. L. Dixon of Renton has been appointed health officer of King County. He assumed office on June 1. Dr. N. E. Roberts, Olympia. has been made health officer of Thurston county to succeed Dr. J. J. O'Leary, resigned.

Walla Walla County Medical Society held a meeting May 6, in honor of Dr. R. J. Dinsmore, Jr., Cleveland, Ohio, specialist in goiter and member of the Cleveland Clinic, who addressed the members on the subject of "Treatment of Goiter."

Conduct Medical Caravan. Under the leadership of Dr. H. G. Willard, Tacoma, president of the Washington State Medical Association, several physicians of Western Washington journeyed to Port Angeles May 7, where they were guests of the Clallam County Medical Society. Addresses were made by Dr. Willard; Dr. J. Warren Bell, Everett; Dr. A. O. Loe, Seattle, and Mr. Robert O. Jones, Seattle, secretary of the Washington Public Health League.

The Seattle Pediatric Society was addressed May 20 by Dr. R. C. Baumgarten, Seattle roentgenologist, who gave an illustrated lecture on "Enlargement of the Thymus Gland."

Dr. F. J. Stephanson of Vancouver, B. C., has opened offices at Everson.

Dr. H. T. Allison of Granite Falls has moved to Stanwood, where he will engage in practice.

THE SEATTLE OBSTETRICAL AND GYNECOLOGICAL SOCIETY was addressed at its meeting May 17 by Dr. D. H. Houston, who spoke on the general subject of care of the newborn infant.

RECEIVES NATIONAL HONOR. Dr. Arthur Crookall, Seattle, has been elected vice president of the American Proctologic Society for 1927.

DR. H. V. WURDEMANN, Colonel, Medical Reserve of Seattle, has been ordered to active duty for service in the Intelligence Section of the General Staff at Washington, D. C., during the month of June.

HEADS HOSPITAL STAFF. Dr. R. J. Kearns has been elected president of the staff of the Sacred Heart hospital, Spokane.

FORM CLINIC. Drs. E. L. Whitney, J. C. Lyman, A. E. Lange and John Keith have organized a clinic at Walla Walla.

DR. KARL J. MAY, formerly of Harrison, Idaho, has located for practice at Republic, Washington.

IDAHO

BONNER COUNTY MEDICAL SOCIETY held a meeting at Sandpoint April 25, at which Dr. Ethel Page Westwood, Sandpoint, was elected president for the ensuing year. Other officers elected were, vice president, Dr. R. M. Bowel, Bonners Ferry; secretary, Dr. N. R. Wallentine, Sandpoint. Dr. O. F. Page, state senator from Bonner county, gave a report of the medical legislation enacted at the last legislative session.

THE BOISE PHYSICIANS' CLUB was addressed at its meeting April 21, by Dr. H. Stone, who discussed "The X-ray Diagnosis of Gastric Ulcer."

DR. E. G. BRADDOCK of Lewiston left recently for Baltimore, where he will engage in postgraduate study at Johns Hopkins Medical School.

OBITUARIES

DR. GEORGE M. HORTON, Seattle, Wash., died May 6, at the Providence Hospital, Seattle, aged sixty-two years. Death followed an operation performed a few hours before. He was born in Shabona Grove, Ill., March 17, 1865. When he was five years old, his family joined the settlement of pioneers at Seattle. He attended Bellevue Hospital Medical College, graduating in 1890. He then returned to Seattle, where he practiced continuously until his death. He served terms as president of the King County Medical Society and the Washington State Medical Association, and was for many years president of the staff of Providence hospital. A further account of his life appears in the editorial columns of this issue.

DR. JOHN R. BROWN, Tacoma, Wash., died May 7, following an illness of only a few hours. He was born in Sweden in 1865, but emigrated to the United States at the age of fifteen years. He received the degree of Doctor of Philosophy from Yale University, following which he spent several years in college teaching. He then entered Northwestern University Medical School from which he graduated in 1899. Following a period of three years in Texas he moved to Tacoma in 1902, where he practiced until his death. He was formerly president of the Pierce County Medical Society and the Washington State Medical Association, and was a member of the American College of Physicians. The editorial department in this issue contains additional remarks upon his life.

DR. BENJAMIN G. GODFREY, Tacoma, Wash., died suddenly at his home May 12, aged 74 years. He was born in England in 1853 and graduated from a Great Britain medical school in 1875. In 1894 he emigrated to Chehalis, Wash., where he practiced for twenty-five years. Later he spent five years in South Bend, Wash. He had lived for the past two years in retirement in Tacoma.

DR. ALBERT C. BAKER, Spokane, Wash., died at his home April 22, following a prolonged illness, aged 52 years. He was born in Whitewater, Wis., in 1875, and graduated from the Kansas City Medical College in 1901. He practiced in Kansas City for several years, moving to Spokane in 1909. He was coroner of Spokane county from 1923 to 1927.

DR. THOMAS DARLING, Gresham, Ore., died at his home May 12, aged 77 years. He was born in Canada in 1850, and graduated from the Detroit College of Medicine and Surgery in 1889. He practiced for many years in Portland, later moving to California. He retired from practice in 1924.

DR. EMMA J. WELTY, Portland, Ore., died at her home May 2, following an extended illness, aged 71 years. She was born at Gettysburg, Pa., in 1856 and graduated from Boston University School of Medicine in 1880. She practiced continuously in Portland from 1886 until forced by ill health to retire one year ago. She was active in philanthropic work, being for many years a director of the Oregon Humane Society.

REPORTS OF SOCIETY MEETINGS

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., A. T. Wanamaker; Secy., W. W. Bell

A general meeting of King County Medical Society was held May 2 in the auditorium of the Medical-Dental Bldg., Seattle, with President Wanamaker in the chair. One hundred four members were present. Minutes of meeting of April 4 were read and approved.

Drs. A. L. Brandt, B. N. Collier and Conrad Jacobson were elected to membership. Applications for membership were read from Drs. D. C. Dickerson and J. M. Henderson.

Dr. D. H. Nickson presented a postmortem specimen of lobar pneumonia, showing numerous bronchiectatic abscesses, with a history of pulmonary trouble for two or three years. He presented another specimen of generalized tuberculosis, with tuberculous enteritis, perforation of the duodenum and bilateral hydronephrosis.

Dr. Robert Dinsmore, of the Cleveland Clinic, presented a paper on the "Practical Points in the Treatment of Goiter." One iodostarin tablet a day is sufficient to care for the needs of children. There are two types of cretins, with and without goiter. Thyroid extract gives some results. Symptoms of exophthalmic goiter were presented. In desperate cases ligation is performed first and lobectomy at the end of three months. Few cases are recorded of exophthalmic goiter in boys under ten years of age. He described the details of surgical treatment for exophthalmic goiter. Rarely is it spontaneously cured. Since the routine preoperative treatment with digitalis has been used, postoperative auricular fibrillation has not been observed. Blood transfusion is of value in the delirium of acute exophthalmos. Malignancy of the thyroid is occasionally seen, ninety per cent being in those who have had preexisting goiters. Sarcoma is rare and responds fairly well to x-ray treatment.

The medical section of the society met May 9, with Dr. Homer Wheelon in the chair. Dr. James Hunter, Seattle, presented a paper on "Spastic Constipation," which was illustrated by radiograms.

Dr. Hunter stated that spastic constipation is the effect of hyperirritability of Auerbach's plexus. It may result from an inflammatory process in the intestinal mucosa following typhoid fever, sprue, dysentary, hyperthyroidism, etc. Many cases follow the injudicious use of cathartics or enemas. Distress is variable in character and location, and is marked by gas formation, bloating and a sense of distention. The stools are invariably small in calibre and may be accompanied by mucus. The colon may be found spastic and tubular on abdominal palpation.

In discussion of the treatment of spastic constipation, Dr. Hunter emphasized that, since the intestine is overstimulated, irritants of any kind are contraindicated. Application of external heat is helpful in allaying distress due to spasm. In the beginning, a bland, nonresidue diet composed chiefly of egg, milk products and cereals is indicated. Later cooked fruits and vegetables are added and, last of all, raw fruits. A daily bowel movement is not considered necessary. Drugs found of value are belladonna, bismuth and calcium salts and tanningen. The paper was discussed by Drs. C. E. Hagyard, C. R. Castlen and C. E. Watts.

PIERCE COUNTY MEDICAL SOCIETY

Pres., E. C. Wheeler; Secty., W. B. Penny

The regular meeting of the Pierce County Medical Society was held in its rooms April 26, 1927, with Dr. E. F. Dodds presiding. Dr. John M. Blackford of Seattle read a paper on the electrocardiograph and its diagnostic value. This was illustrated by the display of electrocardiograms. Drs. W. R. Leverton, C. R. Kinnear and J. P. Kane took part in the discussion.

At the election of officers for the ensuing year Dr. E. C. Wheeler was chosen president. Others officers elected were, vice president, Dr. A. W. Howe; secretary-treasurer, Dr. W. B. Penny; trustees for two years term, Drs. C. D. Hunter and E. F. Dodds. Delegate to state association, Dr. W. D. Read; alternate, Dr. C. R. McCreery.

At the meeting of July 10, Mrs. John Goldsbury, President of the Public Health Nursing Association, made an address on the service of her association. Dr. L. L. Goodenow, Medical Director of the State Industrial Insurance Commission, discussed "End Results of Common Injuries, Especially Relative to Joints." The paper was discussed by Drs. C. H. Hunter, H. G. Willard and Charles Pascoe. "The Surgeon's Office Hour" was the title of a paper read by Dr. H. G. Whitacre.

Dr. E. A. Rich gave an obituary address in memory of Dr. J. R. Brown, who died May 7. The society then passed a motion which read as follows: Be It Resolved that: The Pierce County Medical Society does hereby pay devout tribute to the memory of Dr. J. R. Brown; that this resolution be spread upon the minutes of the society and a copy sent to the bereaved family.

At the meeting May 24, the principal address of the evening was given by Joseph F. Griggs, whose subject was "Cardiovascular Renal Disease."

SPOKANE COUNTY MEDICAL SOCIETY

Pres., Mitchell Langworthy; Secy., R. M. Schulte

Spokane County Medical Society held a meeting at Spokane May 12.

Dr. Alexander P. Hepler, of Seattle, read an interesting and instructive paper on "Movable Kidney."

Dr. E. E. Flehme, of Spokane, read a paper on "Present Treatment of Syphilis." He spoke in detail concerning dosage in the various forms and their complications.

Mr. Robert O. Jones, Executive Secretary of the Public Health League, outlined the recent legislative program, discussing what is contemplated for the future.

SNOHOMISH COUNTY MEDICAL SOCIETY

Pres., O. A. Thomle; Secty., A. P. Duryee

Snohomish County Medical Society Meeting, May 3, at Everett, was devoted to a symposium on the subject of the glands of internal secretion. Dr. L. G. Woodford discussed "The Pancreas"; Dr. William Fulton, "The Adrenal Glands"; and Dr. Percy P. Cooley of Monroe, "The Pituitary Gland." At a special meeting May 17, the guest of honor was Dr. Chas. F. Eikenbary, chief of staff of the Children's Orthopedic Hospital, Seattle.

PUGET SOUND ACADEMY OF OPTHALMOLOGY AND OTOLARYNGOLOGY

Pres., H. V. Wurdemann; Secty., M. J. Morris

A meeting of the Puget Sound Academy of Ophthalmology and Otolaryngology was held at the Virginia Mason Hospital, Seattle, May 17. Dr. L. H. Klemptner presented a man, forty-four years of age, with papilloma of the left nasal cavity. There was a smooth, hemispherical elevation on the anterior part of the septum, a larger sized growth on the anterior part of the nasal floor and a cauliflower-like mass on the anterior tip of the middle turbinate. These tumors have been twice removed and deep x-ray therapy used.

Dr. H. V. Wurdemann showed a case of papillitic atrophy following optic neuroretinitis, the result of intestinal intoxication. Inquiry revealed that the patient was an excessive meat-eater and, following reduction of the amount of meat in his food, together with local treatment, the optic nerve atrophy has not progressed. The case was discussed by Drs. Cameron and Goss.

Dr. B. E. Washburn presented a boy who was a partial albino. There was complete lack of pigment in the left eye with some decrease in the right eye.

Dr. J. H. Harter reported the history of a case of hemangio-endothelioma of the tongue, in a man of fifty-three years. The papules were noticed one month ago and were described as two red, elevated papules on the dorsum of the tongue. They were removed by a cautery knife.

Dr. H. E. Clark presented a boy twelve years old who had had sudden loss of vision in the right eye ten days previously. The only other facts in the case which might suggest an etiologic factor were a history of scarlet fever one year ago, and the findings of infected tonsils and slight albuminuria at the present time.

Announcement was made that Dr. Bruener of Vienna will conduct a series of lectures on neuro-otology in Seattle about August 12.

OREGON

SOUTHERN OREGON MEDICAL ASSOCIATION

Pres., E. J. Wainscott; Secty., C. J. Moser

The thirty-sixth annual meeting of the Southern Oregon Medical Association was held at Ashland, May 10, under the presidency of Dr. Gordon McCracken, Ashland. The scientific program was opened with an address on "Diabetes in Children," by Dr. Blair Holcomb, Portland. Dr. Estella Ford Warner, of Salem, discussed "The General Practitioner and Child Health Service." Dr. Donald Nichelsen, of Portland, read a paper on "Radium and Cancer Surgery." Dr. Robert D. Colby, Cairo, Egypt, gave a short talk on cancer in Egypt.

The following officers were elected by the association for 1928: President, Dr. E. J. Wainscott, Roseburg; vice president, Dr. A. C. Seeley, Roseburg; secretary-treasurer, Dr. C. J. Moser, Grants Pass. The next meeting will be held at Salem.

PUBLIC HEALTH LEAGUES

WASHINGTON

STATE HEALTH CAMPAIGN

With a list of speakers, two hundred and forty-eight in number, including physicians, dentists, dietitians, nurses and college professors, the Public Health League of Washington has inaugurated a state-wide "talk campaign" for public health. These speakers will be used on the various programs over the state before luncheon clubs, commercial organizations, parent-teacher gatherings, church brotherhoods and other like meetings.

The League is sending out two thousand bulletins to all such organizations in Washington, urging that at least two meetings of each every year be dedicated to public health. The list of speakers is enclosed, with their addresses and the topic each is qualified to talk upon. A total of one hundred subjects to select from is made possible from this bulletin. A wide range of subjects is covered in the list, such as: "Your Blood Pressure and Common Sense"; "Why Be Sick"; "The Greatest Discovery of the Age"; "Habit and Mental Stability"; "Disease Dollars and Cents"; "Halitosis"; "Why Be Fat or Thin?"; "Keeping Fit"; "The Most Dangerous Age," and hosts of others, reaching the entire medical and public health field.

According to a statement of Dr. George Dowling, executive chairman of the League, this campaign is one of the most important yet developed by the organization. "We will tap the entire leadership of Washington," he said. "Every available medical talker will be pressed into service some time during the next twelve months. We have the responsibility of telling the public more about scientific medicine, what it can do and what it is trying to do. We will ask, too, for augmented public cooperation along the lines of individual and community health," he added.

GOLDENDALE VISITED

Officials of the Public Health League joined one of President H. G. Willard's caravans on May 21 and journeyed to Goldendale to greet the newly organized society down there. Ten were in the party which motored from Yakima over the mountain roads to the county seat of Klickitat county. The work of the Washington State Medical Association and the League was stressed by the various speakers on the program. This was the first medical meeting at this county seat in history. One veteran physician, Dr. Allen Bonebrake of Goldendale, stated that he never attended one there in his forty-three years of practice. From the enthusiasm developed, it is apparent that this society will function regularly hereafter and do its part in advancing medical interests in that section of Washington.

BOOK REVIEWS

Four Thousand Years of Pharmacy. By Charles H. LaWall, Ph.M., Phar. D., Sc. D., F. R. S. A. Professor of Theory and Practice of Pharmacy, and Dean of the Philadelphia College of Pharmacy. Cloth. 665 pp. J. B. Lippincott Co. Philadelphia and London. 1927.

This is one of those works that at once suggest The Witches Cauldron in Macbeth "Double, double, toil and trouble, Fire burn and cauldron bubble. Eye of newt and toe of frog, Wool of bat and tongue of dog." This historical review dates back to "the eye of newt" period of pharmacy or, to be more precise, to "medical prescriptions in the British Museum which have never been translated or photographed (and perhaps it is just as well), and which are said to date from time of Cheops, about 3700 B. C."

So much superstition has entered into the composition of prescriptions that even now we cling to the prefix Rx, which is a corruption of the sign of the zodiac for Jupiter, and was intended as a symbol for an appeal or prayer to that god. And it has always seemed to the reviewer that its presence in modern prescriptions is a commentary on our attitude, i. e., in not being sure enough of our therapeutics even now to sacrifice the efficacy of prayer.

The author has shown indefatigible scholarship in his wide reading for the production of this treatise, covering, as it does, all the various superstitions, changes and cycles in the evolution of pharmacy among many peoples and ages down to the present era. The origin and introduction of individual drugs are described in detail, such as cinchona, introduced into Europe in 1638 by the wife of the Viceroy of Peru, Count Chinchon. This was the first real specific medicine and ended the era of Galenism which had existed 1500 years. In fact, the vegetable drugs of Galen have supplied the name of galenicals, or herbs, to distinguish them from chemicals or minerals.

There are many side lights thrown on the origin of the names of drugs and, while the following is not noted as far as appears in this book, it may serve as an example. Hashish, a confection of cannabis indica, frequently impelled Arabian addicts to deeds of violence and they were thus known as hashashins, hence the English term, assassins.

Great prices were given in former times for drugs or nostrums. In London, at the beginning of the seventeenth century, the apothecaries were much better paid than physicians. Thus as much as $1500 was paid to a druggist for medicines used in a single case of sickness, and one druggist charged $30.00 for a single pill. Louis XVI paid $5,000 for a tapeworm remedy which turned out to be male fern, known as a teniacide since the time of Galen. This book describes the development of pharmacy, particularly in America, and also the evolution of schools of pharmacy and the standard pharmaceutical publications in use in this country. Altogether, it is a very interesting, instructive and valuable work of its kind.

WINSLOW.

MANAGEMENT OF THE SICK INFANT. By Langley Porter, B.S., M.D., M. R. C. S. (Sug.), L. R. C. P. (Lond.) Professor of Clinical Pediatrics, University of California Medical School, etc., and William E. Carter, M.D., Instructor in Pediatrics, University of California Medical School. Third Revised Edition. Illustrated. 726 pp. $8.50. The C. V. Mosby Co., St. Louis. 1927.

This book is worthy of the highest commendation, being thoroughly up to date in every respect. Part I consists of a chapter each on general consideration, vomiting, diarrhea, constipation, nutrition, hemorrhage, pain and tenderness convulsions and syncope, fever, cough, and prematurity.

Part II takes up the diseases of infancy by systems, a chapter each being devoted to diseases of the respiratory, digestive, heart and circulation, blood and lymphatic, skin, genitourinary, osseous, and internal secretory systems, ending with a chapter on the infectious diseases. The main symptoms, the points and methods of diagnosis and the treatment are considered.

Part III contains a chapter on methods, wherein is portrayed the technic of diagnostic and treatment methods used in pediatrics. A chapter on formulas and receipts follows, another on drugs and one on poisoning completing the text. An excellent index, a wealth of practical information, concisely stated, make this book invaluable as a reference for the physician, whose practice brings him into contact with infants.

C. L. SMITH.

SHOULD WE BE VACCINATED? A Survey of the Controversy in its Historical and Scientific Aspects. By Bernhard J. Stern, Instructor of Sociology, Columbia University. 146 pp. Harper & Brothers, New York and London. 1927.

An interesting description is given of the controversy attending the introduction of vaccination by Jenner. He was vigorously opposed by the followers of smallpox for fear of losing their business. It was claimed that cowpox introduced terrible animal diseases and that in time the victims presented facies and characteristics of the cow. There was vigorous religious opposition, since this prevention of smallpox was contrary to the will of God. The controversy became most bitter and personally directed against Jenner himself and his followers. The author describes various phases of this opposition in England to the present day. This was fully as vigorous and universal as in this country. At the present time, legal exemption from vaccination in England amounts to over forty per cent and 2,500,000 children under twelve years of age are now legally exempt from vaccination against smallpox. The history is given of this controversy in America. It has always been most concentrated and active among the followers of cults and the various quacks, as is equally true at the present day. Compulsory vaccination following the stringent law of 1874 passed in Germany is most enlightening. During the previous twenty-five years in Prussia, the death rate was 42.1 per 100,000 and for the succeeding twenty-five years 1.3. The difficulty with the antivaccinationists is that they lie about facts and deny the truth when it is presented in incontrovertable figures.

EXAMINATION OF CHILDREN. By Clinical and Laboratory Methods. By Abraham Levinson, B.S., M.D. Associate in Pediatrics, Northwestern University Medical School, Chicago, etc. Second Edition. With Eighty-five Illustrations. 192 pp. Cloth, $3.50. The C. V. Mosby Company, St. Louis. 1927.

This is a small textbook which is designed as a guide in clinical and laboratory examination of infants and children. It is printed on a fine quality of gloss paper. This has reproduced the numerous illustrations, including radiograms, with unusual clearness.

The first chapter deals with the taking of a case history. There follow several chapters devoted to

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physical examination, both in a general way and by systems. Differences in physical findings in children as compared with adults are pointed out. Special diagnostic methods such as spinal, ventricular and cisterna puncture, withdrawal of blood and pleural exudate, collection of urine from infants, etc., are described very clearly. The difficulties which the physician will encounter in carrying out these methods have been anticipated and appropriate suggestions offered. Common laboratory tests and their interpretation are described. Sample charts for recording the results of physical and laboratory examinations are found at the end of the volume. The author has arranged the subject matter in an easily available manner. The book should prove valuable to those interested in diseases of early life.

OLMSTED.

THE MEDICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month.) Volume X, Number X, (Boston Number, March, 1927.) Octavo of 311 pages with 34 illustrations. Per Clinic year, July, 1926 to May, 1927. Paper, $12.00; Cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company.

This Boston number contains many valuable clinical reports of a great variety of pathologic conditions. Minot and Murphy discuss liver diet in pernicious anemia. After observing seventy consecutive cases, they believe that daily ingestion of large amounts of mammalian liver, preferably of calves, will increase very markedly and promptly the red blood corpuscles of essentially all patients with pernicious anemia, whose count is lowered. An increase of red cells from 1,500,000 to 3,000,000 in about three weeks has been the rule. It is believed that the patient should continue this sort of diet, even though his red blood-cell count remains high. Although cooked liver is effective, raw liver ground up into pulp is even more potent. An interesting discussion of this subject is given at considerable length. Robey and Freedman discuss the effects of tonsillectomy on the acute attack and recurrence of rheumatic fever. Rheumatic heart diseases have become the most important condition affecting the immediate and subsequent health of young individuals. The conscientious physician will regard every child as a case of potential heart disease. Enucleation of the tonsils offers the best prevention of rheumatic fever and rheumatic heart disease. Diseased tonsils should be enucleated even in the absence of sore throat. Prompt subsidence of fever and general symptoms follow tonsillectomy in a course of rheumatic fever. This will diminish the possibility of cardiac inflammation. Other equally important subjects are discussed.

PRACTICAL TREATISE ON DISEASES OF THE SKIN. By Oliver S. Ormsby, M. D. Clinical Professor and Chairman of the Department of Dermatology, Rush Medical College of the University of Chicago, etc., etc. Third Edition. Thoroughly Revised. 1262 pp., 524 Illustrations. Lea & Febiger, Philadelphia. 1927. $11.00.

Ormsby's new third edition of twelve hundred sixty-two pages brings the previous editions, with work available to the needs of both general and the description of thirty new diseases and seventy-six new illustrations, up to date The author's scrupulous attention to detail, the exhaustive work involved in giving a complete review of American and foreign dermatological literature and the choice of subjects, complete in bibliography, place this new edition in the realms of excellence, in the opinion of the reviewer.

While the subject of dermatology has some way to go before we are on familiar ground in certain groups of cutaneous diseases of visceral or unknown origin, it is safe to say that the steps of progress are steadily onward, enveloping in its entirety this important branch of internal medicine. The author and his co-workers deserve the plaudits of unlimited praise for faithful service in making this standard work available to the needs of both general and special practitioners and to the student of research.

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ORIGINAL CONTRIBUTIONS

TUBERCULOUS PULMONARY SUPPURATION

CLINICAL AND EXPERIMENTAL CONSIDERATIONS *

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I. THE DEVELOPMENT OF THE SURGERY OF PULMONARY TUBERCULOSIS

The rise of the practice of surgery to an honorable and respectable profession is one of the fascinating chapters in the medical history of the sixteenth and seventeenth centuries. Physicians had throughout the ages occupied a respected position in society, but to realize to the full the contempt in which the early surgeons were held, one need only to recall a description of them by Guy Patin who lived from 1601 to 1662 and who was at one time Dean of the Paris Faculty. He regarded surgeons as "booted lackeys, a race of evil, extravagant coxcombs, who wear mustaches and flourish razors."

The surgeon, for many years despised and ignored by his medical confreres except when they had need of his crude instruments and cruder methods in the simple act of venesection, is now being approached for aid in the care of many diseases long considered assailable from only a medical point of view. Even the hitherto exclusively medical domain of cardiac disease is being trespassed upon, for Cutler[1] has achieved the noteworthy distinction of having operated successfully and with benefit upon a case of otherwise hopeless mitral stenosis. Scarcely a disease remains, the conquest of which does not at one time or another demand the hearty cooperation of physician and surgeon.

One of the latest examples is pulmonary tuberculosis, the care of which has for centuries belonged exclusively to the physician. Described by the ancient writers, this scourge of humanity has taken its toll through many centuries with recent evidence, however, of a decrease in the number of its victims. In 1900 the death rate per 100,000 population in the United States was 195.2. In 1921 this had dropped to 94.2 per 100,000. The same story is told in the records of England. A death rate of 300 per 100,000 of population in 1850 had dropped to 130 per 100,000 in 1900, and to 78 per 100,000 in 1920. It is interesting to compare the death rates of tuberculosis with those of cancer. In 1900, 80 persons in 100,000 died of cancer, in 1925, 133 persons in 100,000. Forty years ago the death rate of tuberculosis was four to five times greater than that of cancer, whereas today the death rate of cancer is about one-third greater than the death rate of tuberculosis. This is due not merely to a decreasing incidence of tuberculosis, but also to an absolute increase in the occurrence of cancer, a sub-

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* The Joyce Lecture in Surgery, delivered before the Portland Academy of Medicine, Portland, Ore., April 14, 1927.

ject of tremendous importance and discouraging prospects, but outside the scope of this paper.

The decreasing mortality in tuberculosis is a fact. The hope exists that it may be even further influenced by the use of certain surgical procedures which were first put to practical use just twenty years ago. Surgeons in America were slow to take up the surgery of pulmonary tuberculosis and it is only in the last few years that they have begun to sense the extent and value of the new field opened up by the continental surgeons. Since its inception, the development of this branch of surgical endeavor has been marked by extravagant hopes, discouraging failures, brilliant experimentation and resourceful courage in entering theretofore unexplored fields.

The keystone of the arch in the successful treatment of pulmonary tuberculosis has always been rest. The physician achieves it as well as he can by complete rest in bed. Limitation of activity reduces the number and depth of respiratory movements, but it can never put the lung at complete rest nor can it afford any protection against the violent and explosive movements of coughing. Were this made possible the toll of tuberculosis would be immediately lessened. Through the vision of Carson[2] of Liverpool there lies at the command of the physician a form of treatment directed toward securing this complete rest of the tuberculous lung. As early as 1821 he urged the use of artificial pneumothorax for abscesses or for hemorrhage due to pulmonary tuberculosis. Nothing further was heard of the application of artificial pneumothorax until the idea was rediscovered in 1882 by Forlanini of Pavia. Its use soon became an established procedure in the treatment of tuberculosis. It little behooves a surgeon to present the indications and advantages of pneumothorax, and it may be considered a good working rule that in predominantly unilateral tuberculous disease, whenever a satisfactory artificial pneumothorax is obtainable, this form of therapy should be utilized.

There are, however, certain distinct disadvantages to which the surgeon may call attention and for which he is now providing a way out. In order to be effective in its cure, pneumothorax must be maintained for at least three years and frequently for as long as four and five years. It must be repeated at least every fifth to sixth week and often as frequently as every third to fourth. To some, this is a fearful prospect, and many who once embark upon it, soon abandon it or lose their enthusiasm. There is delay in applying for a refill, and sooner or later the patient finds that he has delayed so long that adhesions between the reexpanded or incompletely collapsed lung and parietal pleura prevent its further use.

Furthermore, even though pneumothorax be faithfully maintained for years, there remains always the danger of reactivation of the disease when the treatment is abandoned. The healing of tuberculosis is brought about by the encapsulation of tubercles and cavities with fibrous tissue. Contraction of this fibrous tissue diminishes the size of the lung so that it cannot fill the thoracic cavity, except by a reexpansion which threatens to reopen the tuberculous lesions. Pain, dyspnea and recrudescence of the tuberculous process make some form of permanent compression necessary.

The development of serous effusions in the course of pneumothorax occurs to a greater or lesser extent in about 50 per cent of all cases so treated, and of these 5 per cent become purulent. This is a serious complication and one very difficult to overcome.

Moreover, pneumothorax is distinctly limited in its application by the presence of adhesions which prevent collapse of the lung. Matson et al[3] in an admirable study conclude that 40 per cent of the failures in pneumothorax treatment are due to adhesions. These are especially firm and numerous over pulmonary cavities, as over the upper lobe, so that the part that needs compression most receives the least. In a series of six hundred patients Matson reports that in 20 per cent no pleural space whatever could be found, in 41 per cent the pneumothorax was only partial, and in only 39 per cent was it satisfactory.

Despite these limitations, the brilliant results obtained in a few appropriate cases treated by pneumothorax have given convincing evidence of the value of pulmonary compression in the treatment of tuberculosis. To obtain it even in the presence of adhesions was a problem which Brauer[4] met by suggesting complete collapse of the firm thoracic wall by extensive resection of the ribs, an operation which had previously been employed by Schede[5] and Estlander[6] in the treatment of chronic empyema.

The theory of this operation for empyema rests upon one of the cardinal principles of surgery. An abscess of the soft parts heals by gradual collapse of its walls through contraction of newly formed fibrous tissue. The so-called "dead space," which constitutes the abscess cavity in chronic empyema, cannot heal because of the incollapsible nature of its walls. Estlander and Schede obtained obliteration of this dead space by multiple resections of ribs which permitted the visceral and parietal pleuræ to come into intimate contact. This operation with the establishment of dependent drainage will cure most cases of chronic empyema.

Applying this principle to the treatment of large apical abscesses due to pulmonary tuberculosis, de Cerenville[7] in 1885 reported four operations in which he resected segments of the second and third ribs anteriorly to effect the collapse of the underlying intrapulmonary cavity.

Despite these early efforts of de Cerenville, little progress in the surgical treatment of pulmonary tuberculosis was made until Brauer recognized the need of a more extensive resection of the thoracic wall. He enlisted the services of Friedrich and their first patient not only survived the operation, but was greatly improved thereby. The principle of the operation seemed therefore to be a correct one, and accordingly they were encouraged to proceed with its application. Discouragement soon followed. Three of their first seven patients died from the operation. The chest wall, deprived not only of its bony support but also of the intercostal musculature, was sucked in by inspiration instead of being expanded. It was forced out during expiration instead of collapsing, producing the so-called "paradoxical" respiration. These to and fro movements were shared by the mediastinum, resulting in marked impairment of aeration of the unaffected lung. As a result, respirations became rapid and labored, circulation through the lungs was greatly embarrassed, and the patients died of respiratory and circulatory insufficiency. Certain modifications were necessary and were instituted, but even these were insufficient to make the original Brauer-Friedrich procedure a safe and attractive operation for wide application.

Other workers entered the field, among them Wilms and Sauerbruch. Working independently, both proceeded along similar lines of development, again applying principles which had been previously evolved in the treatment of empyema. It was in 1895 that Gourdet,[8] working in the clinic of Boiffin, showed experimentally that the most effective method of narrowing the thoracic cavity was by the removal of sections of the ribs posteriorly as far as the tips of the transverse processes of the vertebræ. In cadavers it was found that resection of segments of ribs anteriorly or laterally reduced the circumference of the chest four to five centimeters, whereas the resection of posterior segments reduced the circumference nine centimeters. Applying this principle to pulmonary compression for tuberculosis, Wilms resected portions of the first to eleventh ribs through a long vertical incision in the paravertebral region. In 1914, Wilms[9] reviewed the results obtained on his first twenty-three patients treated by the paravertebral thoracoplasty: four were cured, nine were greatly improved, four slightly improved, one died at operation and four died of progression of the disease.

Sauerbruch of Berlin has contributed a great deal to the subject of the surgical treatment of tuberculosis. He accepted the localization of the Wilms paravertebral resection of ribs. He insisted early upon the need of including always the first and usually the eleventh ribs and to reduce its mortality he performed the operation in two stages. Sauerbruch[10] was also one of the first to employ the adjunct operation of phrenicotomy which in 1911 had been utilized by Stuertz for tuberculosis of the lower lobe. This simple operation has become a valuable aid in pulmonary compression. The paralyzed diaphragm remains passively immobile during inspiration, thus limiting the expansion of the lung and thereby providing considerable pulmonary rest. By assuming an elevated position in the thorax the paralyzed diaphragm produces active compression of the lung, particularly of the lower lobe. Due to a gradual thinning of the diaphragm through atrophy[11] it may assume an even higher position in the chest in the six to ten months following phrenicotomy.

The reduction in volume of the lung produced by phrenicotomy varies, but it is calculated to be around one-fourth to one-third. Considering the capacity of the right lung to be about 2400 c.c., one may expect phrenicotomy to reduce it by 600 to 800 c.c.

In conjunction with artificial pneumothorax phrenicotomy has several applications. In the presence of basal adhesions a more complete collapse is made possible by phrenicotomy. Pneumothorax in the presence of basal adhesions frequently causes pain, an irritative unproductive cough and even vomiting and indigestion. Phrenicotomy alone often dispels these. Persistent hemoptysis from a lung held open by adhesions may also yield to a simple phrenicotomy. It is of value in every case of pneumothorax in that it lengthens the interval between refills and, more important still, it may prevent reactivation of the tuberculous process when the healed shrunken lung is ultimately permitted to reexpand. This is one of its most valuable applications in that it considerably reduces the volume of the thoracic cavity which must be filled by the fibrotic previously diseased lung. It should be more frequently employed by the physician in conjunction with pneumothorax.

As a supplement to thoracoplasty phrenicotomy has several applications: It may provide sufficient improvement in a very sick patient so as to make thoracoplasty a safe undertaking. It increases the compression of a markedly diseased lower lobe. Sauerbruch employs it to determine how well a very ill patient will bear a further compression of the diseased side, and whether there is any danger of stirring up latent trouble in the better lung.

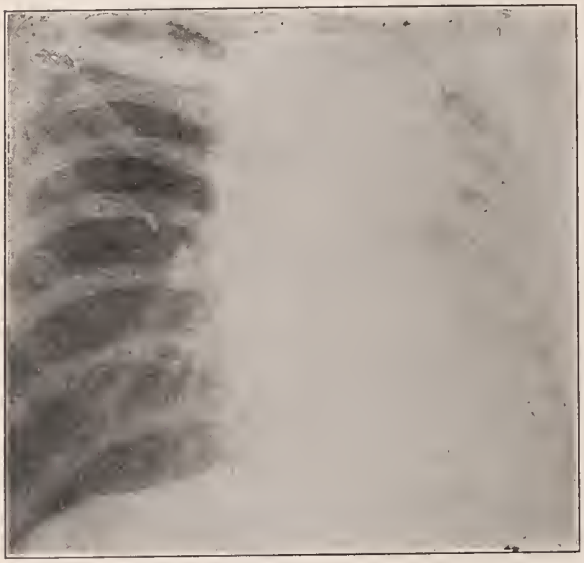

Fig. 1. Unilateral tuberculosis of four years' duration. Note retraction of intercostal spaces, elevation of diaphragm, lateral displacement of trachea, heart and mediastinum.

Phrenicotomy is performed under local anesthesia through a transverse incision in the neck. The operation is not devoid of accidents. Air embolism, an uncontrollable hemorrhage, accidental opening of the thoracic duct and division of the vagus nerve have all been recorded. As an independent measure its effects may be quite disappointing. In conjunction with pneumothorax and thoracoplasty it is an important aid in obtaining pulmonary rest and collapse.

The more radical operation of extrapleural thoracoplasty as developed by Wilms and Sauerbruch has definite limitations but also definite indications. The choice of suitable patients requires the close and earnest cooperation between the internist and surgeon. The internist must be acquainted with the very excellent results which may be expected from surgery in suitable cases and he must be ready to avail himself of this aid at the optimum opportune moment. Too often the physician fails to recognize the suitability of particular cases until further extension of the disease has made surgery impossible.

The type of tuberculous lesion present is of considerable importance. Chronic, fibroid, so-called productive or cirrhotic tuberculosis, manifesting itself by retraction of the chest, by displacement of the heart and mediastinum to the more affected side, and by elevation of the diaphragm, is particularly favorable for operation, as it indicates a well-developed resistance and a marked tendency toward fibrous encapsulation of the tuberculous lesions (fig. 1). It often appears as though nature has gone the limit in attempting to affect a cure by fibrosis and shrinkage of the healing lung. Under such circumstances mobilization of the chest wall, permitting a relaxation and further shrinkage of the healing lung, is just sufficient to turn the tide toward a complete cure. On the other hand, the caseous, often acute and rapidly progressive type of tuberculosis, diffusely spread throughout both lungs in ill-defined pneumonic patches, is most unfavorable and not at all suitable for surgical treatment.

The Sauerbruch Clinic has analyzed its results with reference to the two types of tuberculosis. Of sixty-seven patients in whom the lesion was predominantly of the productive fibroid type only 10 per cent had died within the first few years following operation. Of forty-nine patients in whom

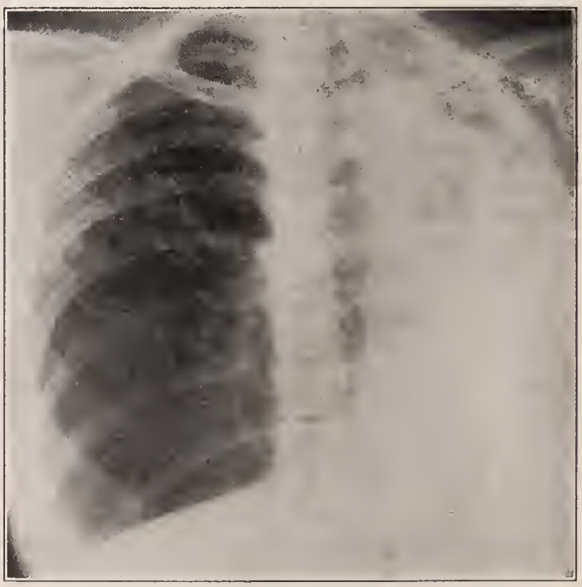

Fig. 2. Predominantly unilateral tuberculosis with an arrested process in the opposite lung.

the lesions were predominantly of the exudative or caseous type, 43 per cent died within the first few years following operation.

The main obstacle to an accurate selection of suitable cases, is the question of the extent of involvement of the better lung. The existence of some tuberculous process is no contraindication to operation, but it is generally agreed that if the roentgen ray or physical examination reveal tuberculosis in the better lung, it must be limited in extent and practically nonprogressive during a period of observation of several months (fig. 2). The presence of a cavity in the better lung is considered a definite contraindication to operation. Sauerbruch performs phrenicotomy on the worse side as a test to determine the effect upon the better lung. If improvement follows or the symptoms remain the same, he proceeds with the thoracoplasty. If the patient is made worse, operation is withheld.

The amount of sputum, the presence of fever and tachycardia are no contraindications. In fact, mediastinal displacement may be so great that certain cardiac symptoms, such as dyspnea, cyanosis and tachycardia are greatly improved or entirely relieved following thoracoplasty.

Tuberculosis elsewhere is not an absolute contraindication to thoracoplasty. It has been performed in the presence of mild laryngeal tuberculosis, mild tuberculosis of a single joint, renal tuberculosis and intestinal tuberculosis without harm to the patient.

Briefly, the patients who may be expected to benefit by a thoracoplastic operation fall into several groups:

1. Those in whom fibrosis and cavitation are predominantly unilateral and in whom pneumothorax cannot be established. The disease may have been arrested by rest in bed, but cannot be controlled on return to active life. These present the most satisfactory candidates for operation.

2. Patients are occasionally encountered in whom pneumothorax is impossible, and who are subject to frequent hemorrhages, probably by fibrous contraction holding open the diseased lung. Thoracoplasty to collapse such a lung is of distinct value. I have just recently operated on such an individual. After four years of treatment the patient began having occasional small but explosive hemorrhages which were alarming in their potentialities.

3. Patients with a distinctly unilateral involvement in whom pneumothorax is impossible and who present a progressive involvement of the affected lung. Thoracoplasty, performed before involvement of the opposite lung takes place, may turn the tide toward recovery.

4. Pneumothorax is occasionally followed by a pleural effusion which becomes purulent by secondary infection (fig. 3). Permanent adhesions fix the partially collapsed lung in place and leave a large empyema cavity which, in the presence of marked septic absorption, may require resection of a rib for drainage. A persistent bronchial fistula often complicates the picture. The surgical principle of obliterating the dead space will require extensive resection of overlying ribs as in a thoracoplasty.

5. Patients in whom the pneumothorax is effectual so long as maintained, but in whom recrudescence of the disease occurs whenever the lung is permitted to reexpand. Permanent fixation of the chest by thoracoplasty may be the only alternative to the annoyance and hardship of constant refills.

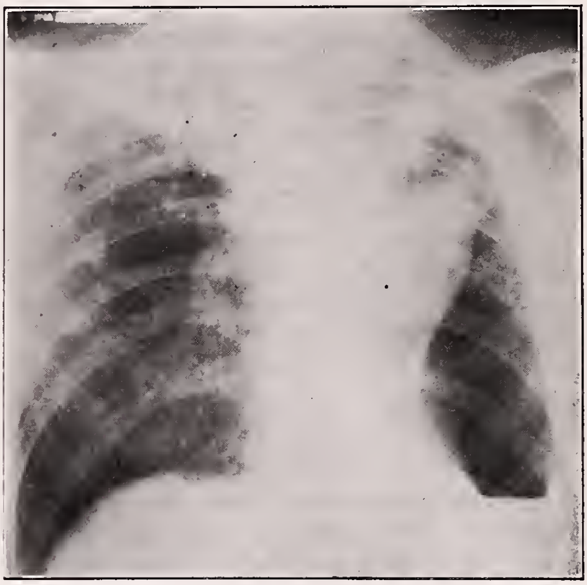

Fig. 3. Bilateral tuberculosis with an incollapsible empyema cavity requiring thoracoplasty for its obliteration.

If thoracoplasty is determined upon, the following procedure is usually employed, its application differing somewhat with the preferences of individual operators. Phrenicotomy is first performed under local anesthesia. Several weeks may elapse to determine its effect upon the fever, pulse and amount of sputum. If there is no unfavorable effect upon the course of the disease, the resection of the ribs is undertaken. It is performed under gas and local anesthesia, preferably in two or more stages, the interval between operations being one to two weeks. In the operation great care should be taken not to injure the intercostal nerves by the clamping of vessels. The injection of the intercostal nerves with alcohol I have abandoned because it prolongs the operation and if the nerve is not isolated and injected directly the infiltration of tissues around the nerve increases rather than decreases postoperative pain. Distressing and prolonged postoperative pain may thus be avoided. Keller does not hesitate to divide the operation in even more than two stages. He ceases operating at once whenever the blood pressure falls below a 100 mm. Hg. This seems an excellent precaution. If bleeding can be absolutely and quickly controlled the wound is closed without drainage. If there are numerous small oozing points a small drain is inserted.

We have resected the lower ribs first, following Sauerbruch's advice, although Lilienthal[12] has reversed the procedure and now removes the upper ribs first. The first and eleventh ribs should be included as either one may serve to keep the thoracic cage suspended, preventing complete collapse.

It has been my experience that the paradoxical respiration described previously in which the chest wall is pulled in with inspiration and expanded with expiration, and which is frequently a distressing postoperative complication, is usually more conspicuous after the removal of the lower ribs. It is often accompanied immediately after operation by a marked difficulty in emptying the bronchi of accumulated sputum and secretion. This can to a certain degree be prevented by leaving the eleventh rib intact, permitting the necessary readjustment in the intrathoracic physiology of circulation and respiration. A week later at a third minor operation the eleventh rib may be removed under local anesthesia.

The average length of rib resected as suggested by Sauerbruch[13] is 3 cm. of the first rib, 5 to 8 cm. of the second to the fifth ribs, 12 to 15 cm. of the sixth to the eighth ribs and 12 to 6 cm. of the ninth to the eleventh ribs, a total of about 110 cm. The total length of resected ribs may be varied according to age and according to the extent of the intrathoracic diseases. In young individuals smaller segments are sufficient.

In the postoperative care, the patient is placed in a semi-Fowler's position, cough and discomfort are controlled by codein and by rectal instillations every four hours of 300 c.c. tap water containing 40 grains of sodium bromide. The patient's further postoperative care requires the equivalent of sanatorium treatment under the close supervision of his physician for four to six months, and not infrequently a year of rest must elapse before healing is advanced sufficiently to permit a return to an active existence.

Such is the operation. Let us now consider the results. Although up to the present time the operation has been reserved only for those patients in whom everything else has failed, and although most of these patients would undoubtedly have died of tuberculosis, an analysis of all reported cases by Alexander[14] reveals some astonishing results. His excellent monograph on "The Surgical Treatment of Pulmonary Tuberculosis" should be in the hands of all interested in the development of this field of surgery. The immediate mortality following this formidable operation was about 1.5 per cent. Of 1159 patients operated upon, 13.2 per cent died during the first two months following operation, death in most instances being due to a tuberculous pneumonia of the better lung, cardiocirculatory failure, or sepsis from wound infection. Progression of the disease during the first year after operation occurred in 19.4 per cent of the cases. Of the 1159 patients, 36.8 per cent were actually cured and 24.4 per cent were improved. This is a truly remarkable showing and one likely to be greatly improved upon when the operation is undertaken, not as a last resort, but as one of the first resorts while the disease is still truly unilateral. It is interesting to note that Alexander estimates that there are approximately 30,000 persons in this country with pulmonary tuberculosis who present suitable indications for surgery, and who will die of their tuberculosis if not operated upon.

Various estimates have been made as to the availability of surgical measures for the treatment of pulmonary tuberculosis. A conservative estimate indicates that about five to eight patients in every one hundred are suitable candidates for surgical compression. That this number will increase as our knowledge and experience increase can be little doubted. At the moment we are inclined to limit the application of surgery to those who have been subjected over a period of years to unsuccessful treatment by rest and by pneumothorax. The day will assuredly come when many more patients will be turned over to the surgeon before these futile attempts are made. When operation is performed as a last resort it is necessarily doomed to many failures. We may confidently look forward to the day when many more cases of exclusively unilateral pulmonary disease will be treated surgically from the date of their recognition. Phrenicotomy and limited rib resections will be our first aids, not our last.

It must, of course, be understood that the great majority of tuberculous persons are not suitable for surgery, and an undue enthusiasm in recommending operation for patients who are questionably suitable cases is to be greatly deplored.

II. THE EXPERIMENTAL PRODUCTION OF PULMONARY TUBERCULOSIS

The present surgical treatment of tuberculosis is by no means a closed subject. Numerous problems remain to be solved provided the proper experimental methods can be employed. Such a method seems now available,[15] and I should like for a moment to bring before you some of our experimental observations.

Experimental tuberculosis has heretofore been carried out for the most part on rabbits and guinea pigs because of the ease with which lesions may be produced by the insufflation of tubercle bacilli. Corper[16] has shown that pulmonary lesions may be produced successfully in rabbits and guinea pigs by the inhalation of the tubercle bacilli. These animals, however, do not lend themselves to surgical procedures, and our efforts were directed toward the establishment of the disease in dogs.

Previous experiences with the production of pyogenic suppuration in dogs[17] prompted us to employ a similar method in the production of tuberculous suppuration. All experiments were performed under complete ether anesthesia. The jugular vein was isolated and a short segment about twelve to sixteen millimeters long was removed. One end of this segment was ligated with silk. Into this segment of vein live human tubercle bacilli grown on an egg medium were introduced. A lead shot, previously immersed in paraffin to render it inert, was also introduced into the segment to permit localization of the embolus by the roentgen ray. The second end was then tied with silk and the embolus sent on its mission by introducing it into the proximal portion of the divided jugular vein. In order to study chronologically and pathologically the development of the tuberculous abscess, the lobes containing the embolus were excised at varying intervals following the introduction of the embolus.

H21: *6-hour Specimen.* Six hours after the introduction of a tuberculous embolus, the right upper lobe was excised. The specimen, expanded with air, showed roentgenographically no evidence of consolidation or infarction due to the embolus. Externally and on palpation, no pulmonary changes were demonstrable. The cut section showed the embolus lying in the artery only a millimeter removed from the bronchus with no changes in the pulmonary tissue beyond it.

H22: *24-hour Specimen.* Twenty-four hours after the introduction of a tuberculous embolus, the right lower lobe was removed. Just previous to the lobectomy the following observations were made: temperature 103.2°, respirations 48 and pulse 152. The freshly removed specimen showed an irregular quadrilateral area of pallor over the surface of the lobe in its peripheral half. There was no increased firmness of the pulmonary tissue except in the immediate proximity of the embolus. The cut section showed the shot lying in a small cavity, surrounded by a narrow zone of firm, congested pulmonary tissue. There was no evidence of alteration in the tissue beyond the embolus except the marked pallor on a limited part of the surface of the lung.

2H14: *5-day Specimen.* Five days after the introduction of a tuberculous embolus the lower right lung was removed. The surface of the excised lobe appeared everywhere normal except a small raised blister 1 mm. in diameter on its posterolateral surface, which broke with the discharge of a small bead of pus. The cut surface of the lobe revealed the embolus lying 2.5 cm. from the hilus, 1 mm. removed from the bronchus. Beyond the embolus in the distal half of the lobe was a quadrilateral area slightly darker in color and firmer to palpation than the normal lung. It suggested early hemorrhagic infarction. On the surface at one edge of this altered pulmonary tissue lay the minute cavity described above.

H19: *7-day Specimen.* The right lower lobe was excised seven days following the introduction of a tuberculous embolus in the jugular vein. In the distal half of the excised lobe could be felt a quadrilateral area which was firm, non-air containing, slightly edematous, which showed on the surface as a dark discolored segment. The cut surface showed the embolus lodged half way between the hilus and the tip of the lobe, within 1 mm. of the main bronchus (fig. 4). Beyond the embolus was a quadrangular area of dark, firm, pulmonary tissue, which extended to the periphery in wedge-shaped fashion—a true hemorrhagic infarction. Just beyond the embolus was a small, softened area which appeared to be due to an early necrosis of pulmonary tissue.

H16: *13-day Specimen.* The left lower lobe was recovered thirteen days following the introduction of a tuberculous embolus into the jugular vein. The undistended specimen revealed a quadrilateral area of firm, non-air containing pulmonary tissue in the peripheral half of the lobe, which showed on the surface as a quadrangular area of dark discoloration. The cut surface disclosed the shot lying in a small cavity about half way between the hilus and the tip of the lung. Beyond the shot was a quadrangular area of mottled grayish white pulmonary tissue, this area extending to the periphery of the lobe. It was apparent that the hemorrhagic infarction noted in H19 had given place in this animal to tuberculous caseation with the formation of a small abscess cavity.

2H15: *16-day Specimen.* On July 9, 1926, this animal received for the second time a tuberculous embolus in the jugular vein; sixteen days later the upper left lobe was excised. In the medial peripheral half of the lobe was a quadrilateral segment of firm lung, the surface of which was somewhat retracted; its color on the surface was bluish black in comparison to the pink of the adjacent normal lung. The cut surface showed the embolus lying about 2 cm. from the hilus, only 1 mm. removed from the bronchus. Beyond the embolus was a quadrangular area of mottled caseous consolidation with no areas of softening or abscess formation (fig. 4).

H=14: *23-day Specimen.* On Mar. 24 this animal received a tuberculous embolus. On the next day

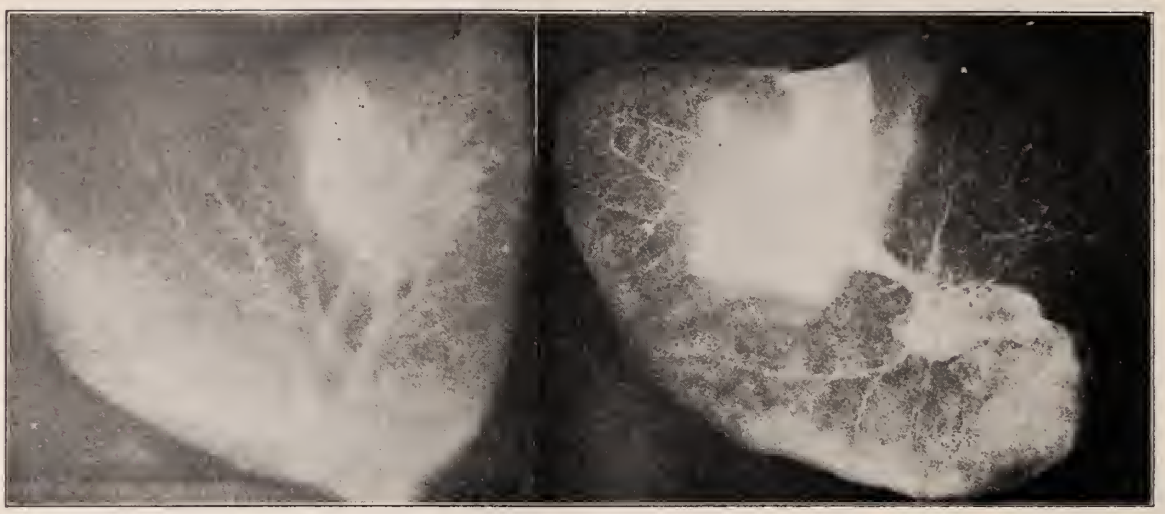

Fig. 4. Roentgenograms of excised specimens obtained from H19 and 2H15 showing markedly increased density in quadrilateral area of infarction beyond embolus.

the following observations were made: temperature 103.2°, respirations 22, pulse 176; leucocytes 16,220, of which 87 per cent were polymorphonuclears, 10 per cent lymphocytes, 2 per cent basophiles and 1 per cent transitionals. On April 5, twelve days after the introduction of the embolus, a small abscess cavity was distinguishable in the roentgenogram. On April 8 the temperature was 101.6°, respirations 30, pulse 108, leucocytes 8,900, of which 77 per cent were polymorphonuclears, 22 per cent lymphocytes and 1 per cent eosinophils. On April 16 the left lower lobe was excised. The specimen showed in the peripheral half of the lobe a firm non-air containing portion with areas of softening which appeared on the surface as thin walled blebs. The cut surface showed the embolus lodged in about the center of the lobe, beyond which lay a quadrilateral area of careous consolidation containing a multilocular abscess.

H11: 25-*day Specimen.* On March 18 this animal received a tuberculous embolus in the jugular vein. Two days later the following observations were made: temperature 102°, respirations 22, pulse 108. The leucocytes numbered 20,200, of which 67 per cent were polymorphonuclears, 28 per cent lymphocytes, mononuclears 3 per cent, eosinophils 2 per cent. On April 6 the animal showed a temperature of 101°, respirations 20, pulse 66, leucocytes 10,200 of which 58 per cent were polymorphonuclears, 40 per cent lymphocytes, and 2 per cent mononuclears. The animal became very weak and emaciated, and was killed on April 12, the twenty-fifth day following the introduction of the embolus. No pathological changes except those in the right lower lobe were discovered. This lobe showed on the surface several large thin-walled blebs which projected beyond the surrounding pulmonary tissue. They marked the location of a large intrapulmonary multilocular abscess surrounded by a narrow margin of white, solid, caseating pulmonary tissue (figs. 5 and 6).

H15: 35-*day Specimen.* On April 21 a tuberculous embolus was introduced into the jugular vein. On the next day the following observations were made: temperature 101.4°, respirations 24, pulse 168, leucocytes 15,900, of which 80 per cent were polymorphonuclears, 19 per cent lymphocytes and 1 per cent large mononuclears. On April 24 the animal's temperature was 103.8°, respirations 42, pulse 156. By April 26 the respirations had dropped to 24, pulse to 96 and temperature to 102.6°. A roentgenogram on April 28 showed a considerable area of density about the shot and by May 3, twelve days after the introduction of the embolus, a small abscess, 6 mm. in diameter, had appeared in the center of a zone of consolidation about 2 cm. in diameter. The temperature on this date was 102.2°, respirations 18, pulse 108. On May 6 the leucocytes numbered 12,600, of which 63 per cent were polymorphonuclears, 36 per cent lymphocytes and 1 per cent eosinophils. On May 13 the leucocytes numbered 9,500, of which 58 per cent were polymorphonuclears, and 42 per cent lymphocytes. On May 26, thirty-five days after the introduction of the embolus, the left lower lobe was excised. Presenting on the surface were several small, thin-walled blebs projecting beyond the surrounding pulmonary tissue. The lobe showed a firm consolidation of an area fully 4 cm. in diameter. The cut surface disclosed the embolus lying in about the center of the lobe, only a millimeter removed from the bronchus. Beyond the embolus was an irregular circular area of caseous consolidation with an abscess cavity in its center (figs. 5 and 6). On July 6 the leucocytes numbered 14,800, of which 73 per cent were polymorphonuclears, and only 23 per cent lymphocytes. The marked relative lymphocytosis previously noted had again subsided following the removal of the tuberculous abscess.

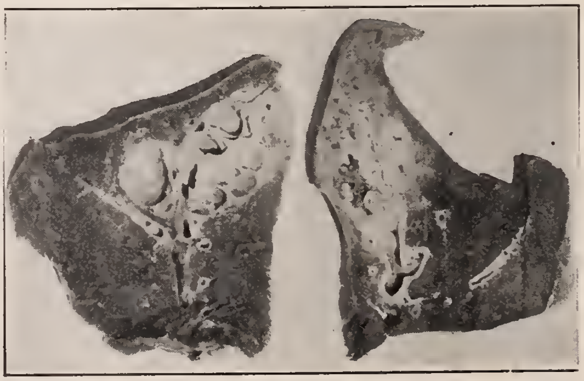

Fig. 5. H11:25-day specimen showing multilocular abscess due to tuberculous embolus. H15:35-day specimen showing widespread caseation and abscess formation in infarcted area.

DISCUSSION

Certain observations in the foregoing experiments may be emphasized: Marked pathologic changes were invariably produced in the lung following the introduction of a tuberculous embolus in the jugular vein, the extent of these changes depending upon the interval of time which had elapsed since the embolus was introduced. The first change to occur was an evident pallor over a restricted portion of the surface of the affected lobe, caused by an anemia of the tissues beyond the embolus. This anemia gradually gave place to a true hemorrhagic infarction, and this in turn was replaced by caseation, central softening, and abscess formation within the infarcted area. The first evidence of an abscess following the introduction of tuberculous emboli appeared on the twelfth day. In Corper's[16] work on the experimental production of tuberculosis by aspiration, visible cavities were found only after one hundred thirty-nine days.

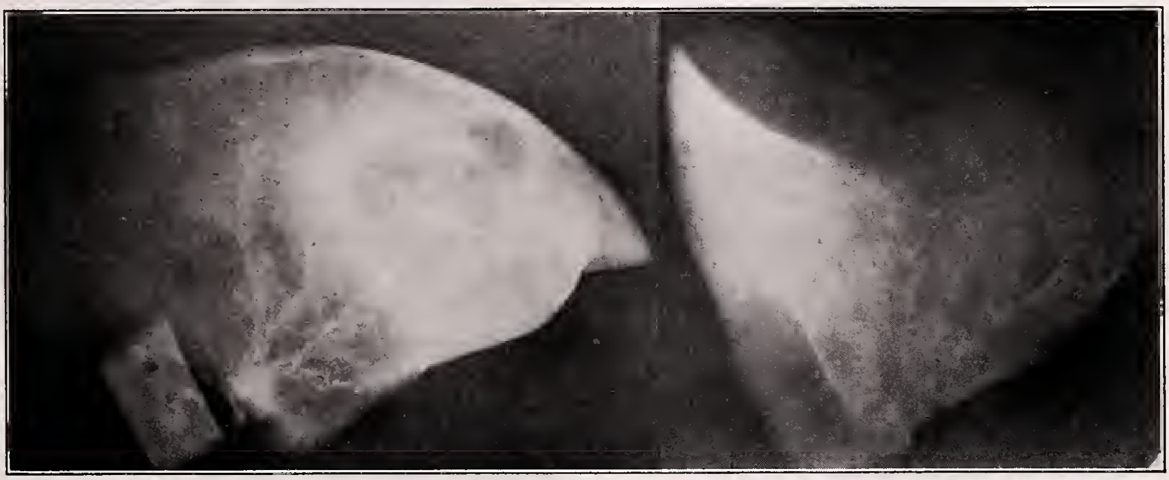

Fig. 6. Roentgenograms of excised specimens pictured in Fig. 5 showing consolidation and cavitation in pulmonary field beyond embolus.

The effect of a tuberculous abscess on the formed blood elements was clearly shown by our observations. Immediately following the introduction of the tuberculous embolus, there occurred an initial rise in the number of leucocytes. This number quickly returned to a normal figure. In this normal number, however, there was a relative preponderance of lymphocytes (H13, H11), an observation in marked contrast to the well sustained polymorpholeucocytosis encountered after the introduction of a pyogenic embolus. This relative lymphocytosis subsided following removal of the affected lobe (H15).

The ease with which recovery and perfect healing was obtained following the resection of these tuberculous lesions in animals suggests that resection of the diseased lobe may be the logical development in the surgical treatment of tuberculosis. Tuffier of Paris has performed this very operation with several successful results. If one can demonstrate a limitation of the tuberculous process to a single lobe, it would seem only logical to eliminate the focus by resection of the lobe. This procedure has very definite possibilities of development.

The results will depend in great measure upon the successful treatment of the bronchial stump. The excision of lobes for the recovery of specimens following the introduction of tuberculous and pyogenic emboli has enabled us to make instructive observations as to the care of the bronchial stump. In all of our lobectomies, five for pyogenic and ten for tuberculous specimens, perfect healing of the bronchial stump occurred without exception, often twice in the same animal and even of the primary bronchus (H23), following a closure which emphasized the following points:

There must be a minimum of trauma to the stump through the application of clamps or through rough handling with toothed forceps. No crushed tissues of any kind capable of acting as a bacteriologic medium should be produced in the stump or allowed to remain there. To this end temporary closure of the bronchus, following separate division of the pulmonary artery and vein between ligatures, was effected by applying a small bulldog artery clamp which occluded the bronchus without injuring it. The bronchus was then closed by a row of fine silk sutures placed in the peribronchial tissues on either side, inverting the edges as much as possible when the sutures were tied. The bulldog clamp was removed. A second inversion of the stump was obtained by applying a second line of sutures also in the peribronchial tissues. A third line of sutures, similarly placed and invaginating the second line, completed the closure. A uniform healing followed this atraumatic method of closing the bronchus.

The uniform and invariable pathologic changes which followed the introduction of a tuberculous embolus into the jugular vein suggest that this experimental method may lend itself to a study of certain much mooted questions, such as the effect of tuberculin in establishing immunity, the pathway of tuberculous infection, and the value of various procedures in the development of the surgery of pulmonary tuberculosis.

BIBLIOGRAPHY

This will be included in the author's reprints.

PHYSICAL SIGNS IN THE CHEST SIMULATING ACTIVE PULMONARY TUBERCULOSIS*

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Physical examination of the chest often discloses certain fallacious signs not produced by active pulmonary tuberculosis. When found, these signs are often deceptive and lead to errors in diagnosis.

Depressions above the clavicle, particularly if unequal or unilateral, are regarded as suggestive of pulmonary tuberculosis at the apex of the lung. In the classification of pulmonary tuberculosis, adopted by the American Sanatorium Association, a slight depression above the clavicles is mentioned among the signs of early or minimal pulmonary tuberculosis. In the *Journal of the American Medical Association,* June 9, 1923, Bray of Raybrook, New York, in a study of 153 healthy adults and 150 patients with incipient pulmonary tuberculosis, concluded that the value of this sign was open to question, and adds that "these depressions are always present in emaciation and loss of weight, irrespective of cause. The depressions are always prominent unilaterally and cannot be differentiated in health from early pulmonary tuberculosis." In a recent study of ten patients having tuberculosis in the left apex of the lung, with no demonstrable infiltration of the right lung, I found that seven of these cases had a depression on the right or healthy side.

Winged scapulae and unilateral drooping of shoulder are signs given by some diagnosticians as indicating late pulmonary tuberculosis. Far advanced cases usually have one or both of these signs, but many individuals who have normal chests exhibit this anomaly also.

If the shape of the thorax is changed by deformity, the condition may be congenital, and if slight is difficult to detect. One side of the chest is prominent anteriorly and posteriorly, and flat along the axillary line. The clavicle may show depression above, the vertebrae are displaced laterally, and sometimes are rotated anteroposteriorly. The result is prominence of the ribs on the convexity, and slightly forward in the concavity. This bulging in-and-out-deformity causes deficient expansion and a lagging of one side of the chest. Tactile fremitus is usually increased, but it is decreased if compensatory emphysema is present over the enlarged side of deformity, and usually decreased over compressed area. The percussion note is impaired, the breath sounds are exaggerated over the emphysematous side and decreased on the compressed side. In some cases rales are elicited, owing to the emphysema, or some adventitious sounds from other causes. These signs, reinforced by constitutional symptoms with added languor, are often misleading.

A deformity of the sternum, or of the anterior ends of the ribs, will cause a flattening or marked depression in the upper chest, the same as that caused by a diseased lung or massive fibrosis. Unilateral atrophy of muscles over the chest-wall, either congenital or caused by some wasting disease other than tuberculosis, will show on inspection a unilateral depression, and the percussion note between the sides is impaired, and if the individual happens to be a mouth breather, or has nasal obstruction or catarrh, rales that resemble those of active pulmonary tuberculosis often can be heard in the apices after expiratory cough and inspiration.

Friction rales occur in the pleura around the pericardium, and are an indication of dry pleurisy of the lingula and other parts of the pleura in contact with the pericardium. These rales are heard during both phases of the respiratory act. However, in many cases it is quite difficult to state positively whether these adventitious sounds are of pulmonary or pleuritic origin. If they are found over an extensive area, it may be assumed they are pleuritic in origin, since much involvement would cause severe constitutional symptoms, while dry pleurisy may persist for years without impairing the general health.

Aortic aneurysm, with a pericarditis, plus syphilis, gives a physical picture similar to that of active pul-

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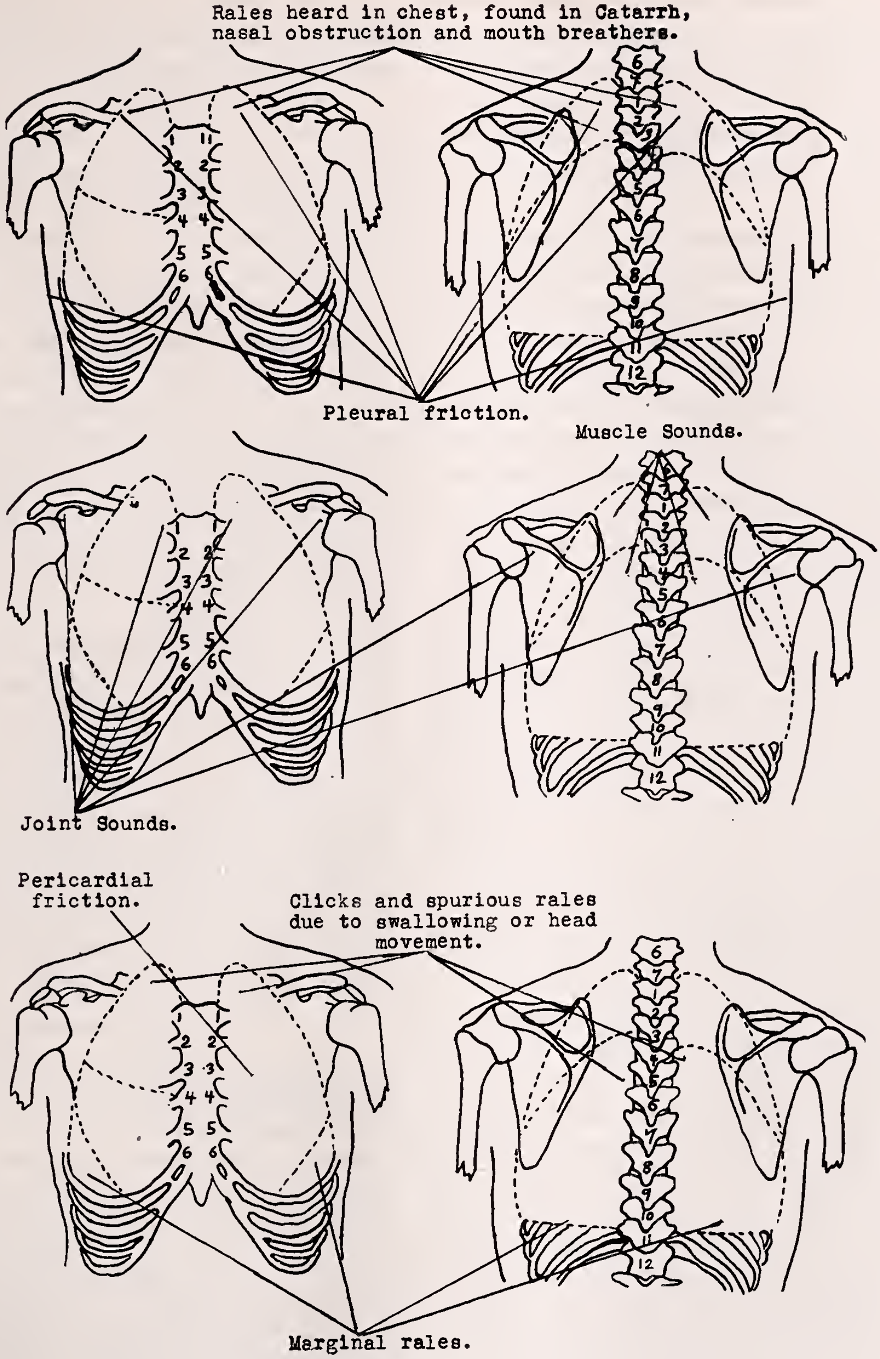
* Read before a Meeting of the Medical Staff of U. S. Veterans' Hospital, Livermore, Calif., 1927.


Rales heard in chest, found in Catarrh, nasal obstruction and mouth breathers.
Pleural friction.
Muscle Sounds.
Joint Sounds.
Pericardial friction.
Clicks and spurious rales due to swallowing or head movement.
Marginal rales.

Charts illustrating sites of spurious rales.

monary tuberculosis. Someone has said that most all syphilitics have rales in the chest. Personally, this has been my observation, but I have no solution as to the etiology of these rales. In many bed-ridden patients rales may be detected, caused by imperfect expansion of the lungs irrespective of the disease. In some patients, after cough and at the end of inspiration, or when the individual swallows, clicks and spurious rales occur. These adventitious sounds are heard above the fourth dorsal spine, and are often mistaken for an active lesion of the lungs, especially if these rales are accompanied by constitutional symptoms caused by focal infection or some obscure disease. Marginal rales heard in the lower margin of the lungs are caused usually by a stripping off of the pleura from the diaphragm. They usually disappear after a few deep breaths, though at times persist indefinitely, but as they occur in the bases of the lungs they do not give much concern, if one is looking for pulmonary tuberculosis. In auscultation, crepitations of the dry skin and hair on the chest is annoying, and often it is necessary to soap or oil the chest to make sure. The accompanying illustration shows the sites of the various types of spurious rales.

The late Colonel Bushnell, in his book "Epidemiology of Tuberculosis," devotes considerable space to spurious rales, muscle and joint sounds, and attributes their cause to muscular contraction, especially of the trapezius and pectoral muscles, when raising and lowering the shoulder in the act of very deep breathing. He also states that sounds originating in the sternum at the second costal cartilage, and along upper dorsal vertebrae, may lead to error. They resemble the medium and large rales of pulmonary tuberculosis and are accentuated by cough. These sounds were a potential source of error during the late war, and those of us engaged in tuberculosis work have observed errors in diagnosis possibly caused by these adventitious sounds. Normally the breath-sounds above the fourth rib and sixth dorsal-spine on the right are slightly bronchovesicular, and if by chance there is a slight deformity from early rickets or other causes, the bronchovesicular breathing is apt to be very pronounced, and if joint and muscle sounds are present and persist, barring the x-ray and laboratory, a hurried diagnosis of active pulmonary disease may be made.

Dr. J. T. King, when examining soldiers for tuberculosis, looked for joint and spurious sounds. He kept notes on eight hundred men who had spurious rales in the upper part of the chest. Most of those sounds emanated from the scapular, costosternal, sternoclavicular, and vertebral articulations, and from the joints of the shoulders anteriorly. Two per cent had persistent, constant apical clicks or crackles of the type which often prove confusing. A number of these men were hospitalized for active pulmonary tuberculosis, but after observation were told they did not have pulmonary disease. It surprised them, as they had been diagnosed tuberculous, and hospitalized for months for active pulmonary tuberculosis.

Bruns, in the *Journal of the American Medical Association*, September 5, 1925, maintains that rales have always presented the most perplexing signs in the physical examination of the lungs. Rales elicited only by expiratory cough and inspiration are generally accepted as an important sign of active pulmonary tuberculosis. He says showers, or fine and medium rales of equal size occurring at the end of a full inspiration, or the so-called coughing rales, are not always associated with active inflammatory process in the parenchyma or bronchi, but may be due to fibrosis atelectasis, pleurisy, influenza, pneumonia, tracheal, bronchial, etc., and cannot be said to be associated with any particular disease or pathologic condition.

In the examination of U. S. Veterans' Bureau claimants not infrequently, as the pulmonary lesion clears up and heals, the rales disappear, but in many cases they persist indefinitely after the disease has become arrested and apparently cured, and the radiograph reveals fibrous tuberculosis, in which event the rales of the cured case are identical with the rales of the active one. If there are no more supporting clinical data, the rales heard in these cases have no significance.

It is impossible for the skilled physician to tell by the shape of the thorax, mobility and physical signs, whether there is a fresh exudative process, an old scar, or whether there has ever been any pulmonary tuberculosis, unless substantiated by complete history and symptoms such as elevation of temperature, increased rapidity of pulse, fatigue, languor and loss of weight, correlated with laboratory and x-ray findings. Modern experience has greatly discounted the importance formerly attached to physical signs, in active pulmonary tuberculosis.

BIBLIOGRAPHY

Bray, H. H.: J. A. M. A., 80:1670, June 9, 1923, and Personal Interview.

Trudeau Foundation School of Tuberculosis, June, 1924. Fishburg, p. 309.

Herbert, G. T.: Tubercle, p. 26, May, 1925.

Bushnell: Epidemiology of Tuberculosis.

Brunns, E. H.: J. A. M. A., 85:743, Sept. 5, 1925.

TWENTY-SIX THOUSAND KAHN TESTS COMPARED WITH WASSERMANN. Beginning with April 1, 1926, both the Wassermann and the Kahn tests have been performed on all blood specimens reaching the Illinois State laboratory for the serum diagnosis of syphilis. A record of many thousands of Kahn tests has thus accumulated in comparison with the Wassermann test. Thomas G. Hull, Springfield, Ill. (Journal A. M. A., June 11, 1927), reports on the results. Kahn and Wassermann tests were made on 25,744 specimens with relative agreement in 97.8 per cent. Clinical histories on 200 specimens in which the Wassermann and Kahn tests disagreed indicated that the Kahn test is more sensitive than the Wassermann test in treated cases. The advantages of the Kahn test are in the saving of labor, time and cost; in the definite character of Kahn reactions in specimens in which the Wassermann is anticomplementary; in comparative simplicity, and in reduction of technical errors.

DISINFECTION OF HANDS FOR SURGICAL PROCEDURES*

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It will be the purpose of this work to prove the efficacy of various methods employed for disinfection of hands preliminary to surgical procedures. The results of various experimental tests as well as a variety of opinions are taken from the literature of the past decade or more. In addition are recorded in detail the results of a series of experiments personally performed.

Since the terms "antiseptic" and "disinfectant" are indiscriminately used, it will be well to define each. An antiseptic is a substance which prevents animal and vegetable matter from undergoing decomposition and prevents the proliferation of animal and vegetable organisms. A disinfectant is a substance which extinguishes life and, more specifically for our purpose, kills pathogenic organisms. In its most efficient form a disinfectant also destroys the spores of organisms.

Since it is with disinfection that this paper has primarily to deal, the steps in the process of disinfection will be isolated and briefly analyzed. That the death of microorganisms is wholly due to the toxicity of the disinfectant is a fallacious belief, as is exemplified by the well-known fact that charcoal and certain dyes of nontoxic nature have definite disinfectant properties.

An emulsion of bacteria may be considered as a suspension of small particles without special chemical properties. Adding now a dissolved substance, it will be, according to its nature and due to surface attraction, more or less concentrated on the surface of the bacteria. In general, the more effectively a given substance diminishes the surface tension of water the greater will be its concentration on the bacteria. Likewise microorganisms are themselves absorbed by other substances with great surface development.

Practical application of this principle is made in the use of unglazed porcelain or charcoal filters to hold back or adsorb bacteria. Surface attraction of bacteria is well exemplified by the staining process. In fact, the processes of disinfection and staining are closely allied, the outstanding difference being that staining does not of necessity kill while disinfection does. To fully appreciate the part played by adsorption in disinfection, it is necessary to take cognizance of the enormous surface development as represented by the bacteria collectively.

Admitting that adsorption is a most important phase in disinfection, then the medium in which the disinfectant acts is a matter of prime importance. This was experimentally proven by Koch who determined that anthrax spores were not killed by exposure to 5 per cent phenol in oil for 100 days, nor in 5 per cent phenol in alcohol for 70 days, but they were killed by 5 per cent phenol in water in forty-eight hours. The virulence of anthrax bacilli was undiminished by forty-eight hours exposure to 5 per cent phenol in oil but they were killed by two minutes exposure to 1 per cent phenol in water.

Paul and Kronig demonstrated that sodium phenolate, which is strongly dissociated and much more soluble than phenol, is a much weaker disinfectant. This would indicate that the emulsified bacteria are the disturbing factor between the solvent and the disinfectant. Likewise cresol, the solubility of which is such that it can only be used as an emulsion with the aid of soaps, etc., is a more effective disinfectant than the much more readily soluble phenol.

The halogens and salts of copper, mercury, silver and lead, all of which have disinfecting properties, are readily adsorbed from solution by proteins. Herzog and Betzel did adsorption experiments, in which yeast was shaken with solutions of varying concentrations of chloroform, silver nitrate, mercuric chloride, formaldehyde and phenol. After a given time the solutions were centrifuged and the amount of disinfectant unadsorbed (in the supernatant fluid) was determined. Chloroform, silver nitrate and mercuric chloride agreed with the adsorption formula: log c-log K plus n log b. Results with phenol were only referable to concentrations under 1 per cent. Formaldehyde did not follow the adsorption formula at all, even though it has a powerful inhibitive effect on bacterial growth[6].

Granting that adsorption is an initial and essential phase in the process of disinfection, what is the specific action between microorganisms and the adsorbed disinfectant? With the heavy metals it is generally believed that this action is the formation of protein compounds. In this connection it is interesting to note that anthrax spores apparently killed by mercuric chloride can be reactivated by treatment with H_2S. Here the soluble mercuric chloride is converted into insoluble HgS and a growth of anthrax bacilli obtained. Adsorption serves to surround the bacteria with a film of disinfectant, locally highly concentrated and therefore much more effective than in the dilute solution.

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Another factor is the reaction of bacteria to the specific toxin. Thus, mercuric acetate is more adsorbed than mercuric chloride but its toxic action is much less, for the latter is more highly ionized. Cyanide of mercury, which is but little ionized, has but a weak destructive action on bacteria. This makes it appear that the Hg ion is the essential disinfectant unit. Kronig and Paul have shown that the germicidal activity of mercuric chloride is much depressed by the addition of NaCl because in such a solution $NaHgCl_3$ is formed and when ionized the Hg ion appears in the anion.

Friedenthal has pointed out that the H ion has the greatest antiseptic virtue of all ions. One gram is computed as being capable of maintaining sterility in 30,000,000 litres of culture media. Aubel sought to determine the relationship between toxicity of acids[6] to bacteria and their H ion concentration. He studied the acids under four groups: (1) formic and acetic; (2) oxalic, tartaric and lactic, which were found to be the more toxic; (3) sulphuric, found to be intermediate; and (4) phosphoric, hydrochloric and nitric, found to be the least effective. These conclusions were approved experimentally by Paul, Birstein and Reuss.

In order to reconcile the facts that the H ion has marked disinfectant properties and that of the two acids, hydrochloric and acetic in isohydric solution, acetic acid is the better disinfectant, it is necessary to consider something more than toxicity of the H ion. There are two possible explanations: (1) that mineral acids have a coagulating effect on the capsule, which tends to form an insoluble layer and protect the cell from further effect; and (2) the organic acids, being lipoid-soluble, more readily penetrate the cell wall in the molecular condition and furnish sufficient H ions within the cell to exert a lethal effect. The latter explanation is somewhat substantiated by Crozier who studied the penetrating qualities of a number of acids by means of color change produced by the intracellular indicator of the chromodoris zebra. According to Crozier the penetrating ability depends largely upon the union of the acid with one or more of the constituents of the cell surface. In the case of weak monobasic acids, this constituent was of a fatty nature. Of the organic acids studied, this penetrating power was in order of the solubilities of these acids in olive oil or xylol. These facts are significant in showing why some substances have marked disinfectant properties toward one class of bacteria and are more or less inactive toward another.

Having touched on the matter of the specificity of disinfectants for certain groups or types of microorganisms, it is well to look further into this phase of the subject. It is a more or less general belief that a disinfectant is nonspecific, that it acts in the same way on all bacteria. This is not the case at all. Bechold found that, by substituting successive Br atoms in an organic disinfectant for staphylococci and streptococci, a maximum disinfectant action was reached with 3 or 4 Br atoms; for B. coli with 2 Br atoms; and with substitution of more Br atoms the disinfectant action fails rapidly; for paratyphosus the substitution of Br atoms has no effect; and for diphtheria the maximum effect is reached with 3 Br atoms. He has further shown that, while the disinfectant properties of one substance for a certain organism may exceed those of another, this activity may be reversed in the case of a different organism, for example:

	B. diptheria	B. Coli
I. Lysol	1:20,000	1:800
B-naphthol	1:10,000	1:8,000

2. A mixture of tri- and tetrabrom- B-naphthol in 1 per cent solution destroyed staphylococci in 2 to 3 minutes, whereas lysol solution containing 1 per cent cresol required more than 10 minutes. Conversely, a 5 per cent lysol solution containing 2½ per cent cresol was lethal for the tubercle bacillus in 4½ hours, and a solution of tri- and tetrabrom- B-naphthol of corresponding strength had no effect in 24 hours.

It is possible that the rate of bacterial destruction by disinfectants has some resemblance to the law of mass action, as formulated by Wilhelmy in 1850: "The amount of chemical change in a given time is directly proportional to the quantity of reacting substance present in the system." Experiments to prove an analogy met with much criticisim. Our knowledge of certain disturbing influences is likely far from complete. Brooks says, "The acceptance of such an explanation makes it necessary to assume that loss of viability, like the breaking up of a single molecule of saccharose during eversion, takes place in a single step. In other words, that the disinfectant cannot have any cumulative effect on the viability of the cells. If the loss of viability occurred in two or more steps, some or all of the cells surviving at any time during the process would be partially dead and a greater proportion of them would succumb in any given interval of time than would have done so during the same interval at the beginning of the process, when all the cells were entirely unaffected. In other words, the percentage of deaths would decrease during the process instead of remaining constant, as demanded by the law of monomolecular reactions." In spite of its criticisms, such a study of disinfection affords at least a means of comparing two disinfectants more or less accurately, as demonstrated by Lee and Gilbert[5].

Many standardized hospitals now have a "hospital analysis sheet" which is compiled and read monthly at staff meetings. This sheet contains a clause, relating to the number of infections in the surgical service. During the winter of 1924-1925 there was a marked increase in infections at St. Luke's Hospital in Duluth, Minnesota. An investigation as to the cause was conducted by A. N. Collins. The technic and the very interesting results and conclusions are published in *Minnesota Medicine,* March, 1925[7].

Of particular interest in regard to disinfection of skin knives are experiments by McKenna and Fisher of Brooklyn. These experiments are designed to show the increased efficacy of potassium-mercuric-iodide over tincture of iodine and mercuric bichloride for disinfection of the operative field. This, of course, does not apply directly to hand disinfection. Special stress is laid on absorption, bactericidal properties and tissue injury. The conclusions reached after consideration of carefully planned and executed experiments is that a disinfectant placed on the skin kills bacteria on the surface and many of those in the skin follicles, but does not effect absolute sterilization. Potassium-mercuric-iodide and tincture of iodine are efficacious in killing bacteria on and in the skin. Also potassium-mercuric-iodide of 1 per cent in acetone or 70 per cent alcohol is more efficacious than the official tincture of iodine[8]. Zurochmid, in a similar but less extensive set of experiments, concluded that picric acid was a better disinfectant than tincture of iodine. The value of alcohol in enhancing the bactericidal power of disinfectants is experimentally demonstrated by Hansen of Denmark[9]. Cignozzi in a similar study concluded that 70 per cent ethyl alcohol plus 0.5 to 1 per cent acetic acid was the best disinfectant[10].

Pokotilo of Germany has devised the following process for disinfection of hands: Scrub with soap and water, then rub with gauze dipped in a 5 per cent solution of tannin in water. Since the tannin is not bactericidal, it must be boiled before using. It acts by forming a film over the hands. It must be washed off immediately after use, as it will otherwise injure the tissues. Of 57 cultures taken from the gauze after it was used, only two showed bacterial growth and these only two or three colonies each. The same results obtained without scrubbing the hands.

Lutzmoer of Werro, England, deems it quite unnecessary to boil rubber gloves. His method is to put the gloves on, wash them with soap and water, and then wet the surface with the following solution:

Iodi puri, grams	2
Spiriti vini (70 grams)	c. c. 200

He says that in nine years experience with this method he has never seen fever or infection.

In an article written by Theobald and Bigger of Dublin and based on experimental work they contend: (1) That is it illogical and unnecessary to wash socially clean hands before operating; (2) that rubber gloves can be easily sterilized without resort to heat; and (3) that the practice of abstention is of great importance. The grounds on which they base these contentions are given in detail in *Lancet,* March 8, 1924[14].

Consrer and Laird of the Pennsylvania Department of Health conducted tests with a great number of so-called disinfectants and germicides on the basis that a disinfectant for the hands should possess the following properties: (1) Be readily available; (2) be on the market; (3) be accessible in rural as well as municipal districts; (4) be already known by the medical profession and laity; (5) and to have had some former use, whereby the public would be acquainted with its use and relative safety and dangers dependent thereon; (6) sufficiently inexpensive so that cost would not make its use prohibitive; (7) possess natural or artificial warning signals against its internal use; (8) be relatively free from toxic properties, if consumed accidently or absorbed; (9) be stable in original package against time, climate, and other physical conditions that it might encounter; (10) exert an almost instantaneous action when applied as a germicide; (11) cause no irritation with long or continued use; and (12) be pleasing to use. The details of this work with results and conclusions are very interesting and valuable[11].

Howard of Glasgow has made a series of tests to determine the efficiency of various disinfectants, using known cultures and various disinfecting substances[16].

In this study and work, which has for its purpose the determination of a practical means of disinfecting the hands, the utmost care is taken to rule out altering factors both as regards materials used and methods employed.

Socially clean hands may be defined as hands subjected to the usual soap and water cleansing. The time, method and choice of soap are left to the subject.

Scrubbed hands, regardless of time, is a term applied to hands that are systematically scrubbed with a sterile, stiff-bristled brush and orange stick for cleansing under the nails for the allotted time (2, 5 or 10 minutes) as measured by the clock and according to a standard routine.

The making of cultures is carried out as follows: Swabs are made by twisting cotton on wooden applicators.· These are wrapped in paper and dry-sterilized. At the time of culturing the swab is removed with aseptic care from its container. For the hand cultures the swab is rubbed thoroughly over the surface of the part, excepting the cuticular area and the area under the nails. For the cuticular area a small swab is selected and is made to follow the line of junction of nail and skin with considerable force. For the culture beneath the nails a small swab is selected and the flesh is pulled away from the nail as far as possible so that the swab is inserted well under the nail. Having done this the swab is applied thoroughly to the plate of culture media with the same aseptic care as is employed elsewhere.

SERIES 1.

CULTURE OF SOCIALLY CLEAN HANDS

NAME	MEDIA	PROCESS	OCCUPATION	TIME	COLONIES	ORGANISMS	GROWTH
Miss D.	Agar	Regular	Technician	24 Hrs.		Staph.	★
Mr. S.	Agar	Regular	Student	24 Hrs.		Staph.	★
Miss W.	Agar	Regular	Librarian	24 Hrs.		Staph.	★ ★
Miss H.	Agar	Regular	Librarian	24 Hrs.		Staph.	★ ★
Mr. G.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★
Mr. R.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★
Mr. M.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★
Mr. W.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★
Miss B.	Agar	Regular	Technician	24 Hrs.		Staph.	★
Control	Agar	Regular		24 Hrs.	0		

Remarks: When more than 100 colonies are present the amount of growth is given as ★, ★ ★, ★ ★ ★, or ★ ★ ★ ★.

Regular process refers to the process as outlined in the introduction.

Controls are varied to include swabs, media, water, soap and brushes.

SERIES 2.

CULTURE OF CUTICLE OF SOCIALLY CLEAN HANDS.

Miss D.	Agar	Regular	Technician	24 Hrs.		Staph.	★ ★ ★
Miss B.	Agar	Regular	Technician	24 Hrs.		Staph.	★
Miss H.	Agar	Regular	Librarian	24 Hrs.		Staph.	★ ★ ★ ★
Miss W.	Agar	Regular	Librarian	24 Hrs.		Staph.	★ ★ ★ ★
Mr. S.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★
Mr. G.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★ ★
Mr. R.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★ ★ ★
Mr. M.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★ ★ ★
Mr. W.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★ ★ ★
Control	Agar	Regular		24 Hrs.	0		

SERIES 3.

CULTURE UNDER NAILS OF SOCIALLY CLEAN HANDS

Mr. S.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★
Mr. G.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★ ★ ★
Mr. R.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★ ★ ★
Mr. M.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★ ★ ★
Mr. W.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★ ★ ★
Miss B.	Agar	Regular	Technician	24 Hrs.		Staph.	★ ★
Miss D.	Agar	Regular	Technician	24 Hrs.		Staph.	★ ★ ★ ★
Miss H.	Agar	Regular	Librarian	24 Hrs.		Staph.	★ ★ ★ ★
Miss W.	Agar	Regular	Librarian	24 Hrs.		Staph.	★ ★ ★ ★
Control	Agar	Regular		24 Hrs.	0		

SERIES 4.

CULTURE OF HANDS AFTER SCRUBBING 2½ MINUTES

Miss D.	Agar	Regular	Technician	24 Hrs.	44	Staph.	
Miss B.	Agar	Regular	Technician	24 Hrs.	9	Staph.	
Miss W.	Agar	Regular	Librarian	24 Hrs.	97	Staph.	
Miss H.	Agar	Regular	Librarian	24 Hrs.	66	Staph.	
Mr. W.	Agar	Regular	Student	24 Hrs.	81	Staph.	
Mr. M.	Agar	Regular	Student	24 Hrs.	66	Staph.	
Mr. R.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★ ★
Mr. G.	Agar	Regular	Student	24 Hrs.	41	Staph.	
Mr. S.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★
Control	Agar	Regular		24 Hrs.	0		

SERIES 5.

Culture of Cuticle After Scrubbing 2½ Minutes

Miss D.	Agar	Regular	Technician	24 Hrs.		Staph.	★★★
Miss B.	Agar	Regular	Technician	24 Hrs.		Staph.	
Miss W.	Agar	Regular	Librarian	24 Hrs.		Staph.	★★★
Miss H.	Agar	Regular	Librarian	24 Hrs.		Staph.	★★★
Mr. W.	Agar	Regular	Student	24 Hrs.		Staph.	★★★
Mr. M.	Agar	Regular	Student	24 Hrs.		Staph.	★★
Mr. R.	Agar	Regular	Student	24 Hrs.		Staph.	★★★
Mr. G.	Agar	Regular	Student	24 Hrs.		Staph.	★
Mr. S.	Agar	Regular	Student	24 Hrs.		Staph.	★★★
Control	Agar	Regular		24 Hrs.	0		0

SERIES 6.

Culture Under Nails After Scrubbing 2½ Minutes

NAME	MEDIA	PROCESS	OCCUPATION	TIME	COLONIES	ORGANISMS	GROWTH
Miss D.	Agar	Regular	Technician	24 Hrs.		Staph.	★★★
Miss B.	Agar	Regular	Technician	24 Hrs.	99	Staph.	
Miss W.	Agar	Regular	Librarian	24 Hrs.		Staph.	★★★
Miss H.	Agar	Regular	Librarian	24 Hrs.		Staph.	★★★★
Mr. W.	Agar	Regular	Student	24 Hrs.		Staph.	★★★★
Mr. M.	Agar	Regular	Student	24 Hrs.		Staph.	★★★★
Mr. R.	Agar	Regular	Student	24 Hrs.		Staph.	★★★★
Mr. G.	Agar	Regular	Student	24 Hrs.		Staph.	★★
Mr. S.	Agar	Regular	Student	24 Hrs.		Staph.	★★
Control	Agar	Regular		24 Hrs.	0		0

SERIES 7.

Culture of Hands After Scrubbing 5 Minutes

Miss T.	Agar	Regular	Student	24 Hrs.	10	Staph.	
Miss J.	Agar	Regular	Student	24 Hrs.	10	Staph.	
Mr. F.	Agar	Regular	Student	24 Hrs.	33	Staph.	
Mr. S.	Agar	Regular	Student	24 Hrs.	27	Staph.	
Miss M.	Agar	Regular	Student	24 Hrs.	58	Staph.	
Mr. G.	Agar	Regular	Student	24 Hrs.	8	Staph.	
Mr. H.	Agar	Regular	Student	24 Hrs.	60	Staph.	
Miss G.	Agar	Regular	Student	24 Hrs.		Staph.	★
Mr. A.	Agar	Regular	Student	24 Hrs.	32	Staph.	
Control	Agar	Regular		24 Hrs.	0		0

SERIES 8.

Culture of Cuticle After Scrubbing 6 Minutes

Miss T.	Agar	Regular	Student	24 Hrs.	60	Staph.	
Miss J.	Agar	Regular	Student	24 Hrs.		Staph.	★★
Mr. F.	Agar	Regular	Student	24 Hrs.		Staph.	★
Mr. S.	Agar	Regular	Student	24 Hrs.	36	Staph.	
Miss M.	Agar	Regular	Student	24 Hrs.		Staph.	★★
Mr. G.	Agar	Regular	Student	24 Hrs.	71	Staph.	
Mr. H.	Agar	Regular	Student	24 Hrs.		Staph.	★★★
Miss G.	Agar	Regular	Student	24 Hrs.		Staph.	★★★
Mr. A.	Agar	Regular	Student	24 Hrs.		Staph.	★
Control	Agar	Regular		24 Hrs.	0		0

SERIES 9.

Culture of Hands After Scrubbing 5 Minutes

Miss T.	Agar	Regular	Student	24 Hrs.		Staph.	★
Miss J.	Agar	Regular	Student	24 Hrs.		Staph.	★★
Mr. F.	Agar	Regular	Student	24 Hrs.		Staph.	★
Mr. S.	Agar	Regular	Student	24 Hrs.	47	Staph.	
Miss M.	Agar	Regular	Student	24 Hrs.		Staph.	★★★
Mr. G.	Agar	Regular	Student	24 Hrs.		Staph.	★★
Mr. H.	Agar	Regular	Student	24 Hrs.		Staph.	★★★
Miss G.	Agar	Regular	Student	24 Hrs.		Staph.	★★★
Mr. A.	Agar	Regular	Student	24 Hrs.		Staph.	★★
Control	Agar	Regular		24 Hrs.	0		0

SERIES 10.

Culture of Hands After Scrubbing 10 Minutes

Mr. G.	Agar	Regular	Student	24 Hrs.	22	Staph.	
Mr. N.	Agar	Regular	Student	24 Hrs.	11	Staph.	
Miss L.	Agar	Regular	Technician	24 Hrs.	2	Staph.	
Mr. B.	Agar	Regular	Student	24 Hrs.		Staph.	★
Mr. A.	Agar	Regular	Student	24 Hrs.	20	Staph.	
Miss C.	Agar	Regular	Student	24 Hrs.	60	Staph.	
Mr. C.	Agar	Regular	Student	24 Hrs.	19	Staph.	
Mr. S.	Agar	Regular	Student	24 Hrs.	16	Staph.	
Mr. B.	Agar	Regular	Student	24 Hrs.	31	Staph.	
Control	Agar	Regular		24 Hrs.	0		0

SERIES 11.

Culture of Cuticle After Scrubbing 10 Minutes

NAME	MEDIA	PROCESS	OCCUPATION	TIME	COLONIES	ORGANISMS	GROWTH
Mr. G.	Agar	Regular	Student	24 Hrs.	13	Staph.	
Mr. N.	Agar	Regular	Student	24 Hrs.		Staph.	★
Miss L.	Agar	Regular	Technician	24 Hrs.	2	Staph.	
Mr. B.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★
Mr. A.	Agar	Regular	Student	24 Hrs.		Staph.	★
Miss C.	Agar	Regular	Student	24 Hrs.		Staph.	★
Mr. C.	Agar	Regular	Student	24 Hrs.	63	Staph.	
Mr. S.	Agar	Regular	Student	24 Hrs.		Staph.	★
Mr. B.	Agar	Regular	Student	24 Hrs.		Staph.	★
Control	Agar	Regular		24 Hrs.	0		0

SERIES 12.

Culture Under Nails After Scrubbing 10 Minutes

Mr. G.	Agar	Regular	Student	24 Hrs.	8	Staph.	
Mr. N.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★ ★
Miss L.	Agar	Regular	Technician	24 Hrs.		Staph.	★
Mr. B.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★ ★
Mr. A.	Agar	Regular	Student	24 Hrs.		Staph.	★
Miss C.	Agar	Regular	Student	24 Hrs.	0		
Mr. C.	Agar	Regular	Student	24 Hrs.	41	Staph.	
Mr. S.	Agar	Regular	Student	24 Hrs.		Staph.	★
Mr. B.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★
Control	Agar	Regular		24 Hrs.	0		

SERIES 13.

Culture of Hands; Socially Clean Plus 1 Minute Washing With 70 Per Cent Alcohol.

Miss W.	Agar	Regular	Librarian	24 Hrs.		Staph.	★
Mr. B.	Agar	Regular	Student	24 Hrs.	67	Staph.	
Mrs. B.	Agar	Regular	Student	24 Hrs.	83	Staph.	
Mr. S.	Agar	Regular	Student	24 Hrs.	94	Staph.	
Mr. S.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★
Mr. V.	Agar	Regular	Student	24 Hrs.		Staph.	★
Mr. W.	Agar	Regular	Student	24 Hrs.		Staph.	★
Miss H.	Agar	Regular	Librarian	24 Hrs.		Staph.	★ ★
Mr. N.	Agar	Regular	Student	24 Hrs.		Staph.	★ ★
Control	Agar	Regular		24 Hrs.	0		0

Regular process in series 13 to 22 inclusive. Applies to a culture embracing the hands, cuticle, and the are under the nails.

SERIES 14.

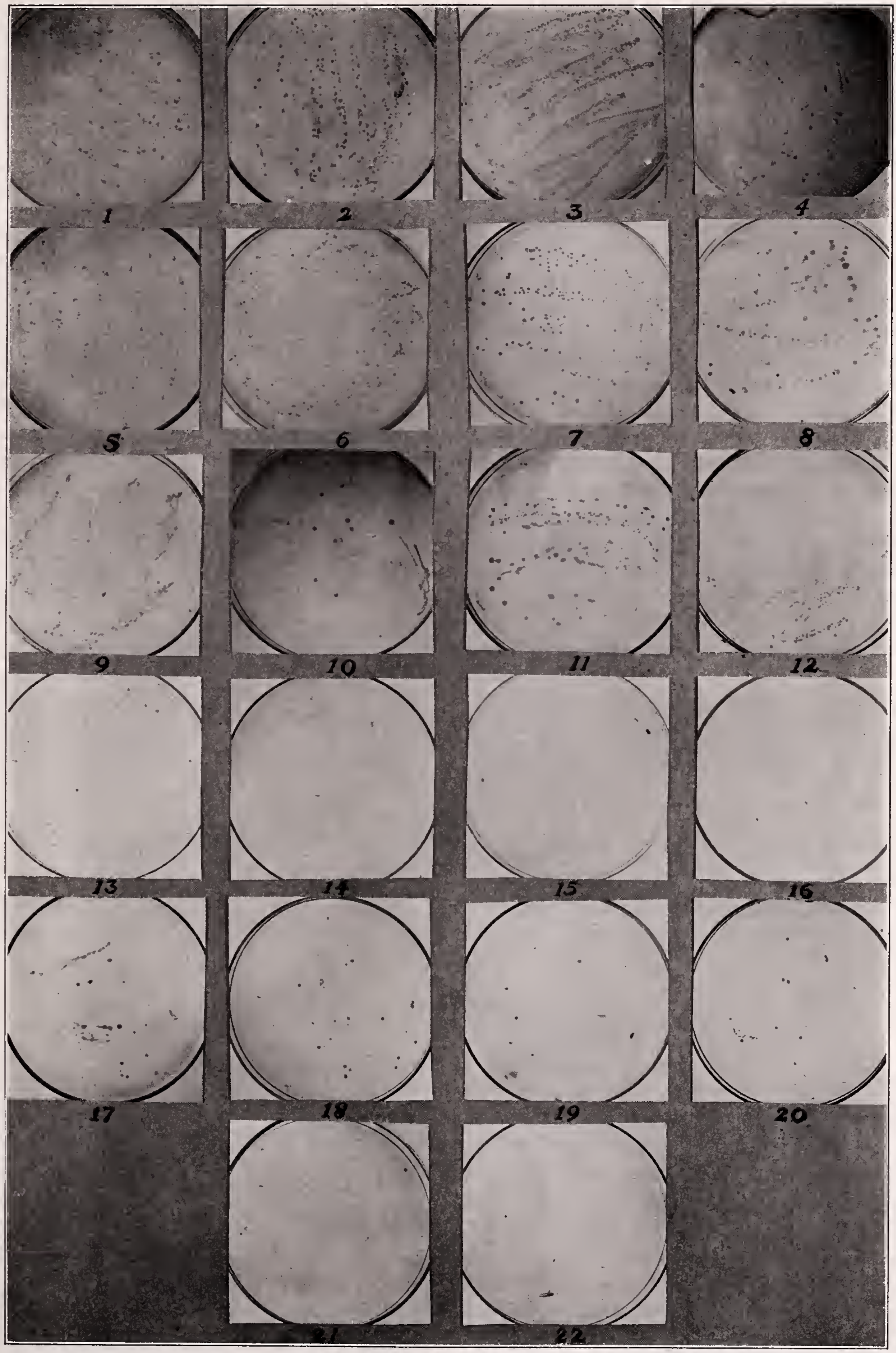
Culture of Hands Scrubbed 10 Minutes and Washed 1 Minute With 70 Per Cent Alcohol.

Mr. W.	Agar	Regular	Student	24 Hrs.	7	Staph.	
Miss W.	Agar	Regular	Librarian	24 Hrs.	9	Staph.	
Miss H.	Agar	Regular	Librarian	24 Hrs.	1	Staph.	
Mr. H.	Agar	Regular	Student	24 Hrs.	0	Staph.	
Miss L.	Agar	Regular	Technician	24 Hrs.	0		
Mrs. B.	Agar	Regular	Technician	24 Hrs.	0		
Mr. C.	Agar	Regular	Student	24 Hrs.	0		
Mr. G.	Agar	Regular	Student	24 Hrs.	42	Staph.	
Mr. F.	Agar	Regular	Student	24 Hrs.	11	Staph.	
Control	Agar	Regular		24 Hrs.	0		

SERIES 15.

Culture of Hands; Socially Clean Plus 1 Minute Washing With 5 Per Cent Thymol in 60 Per Cent Alcohol.

Mr. P.	Agar	Regular	Student	24 Hrs.		Staph.	★
Mr. B.	Agar	Regular	Student	24 Hrs.	2	Staph.	
Miss M.	Agar	Regular	Technician	24 Hrs.	1	Staph.	
Mr. H.	Agar	Regular	Student	24 Hrs.	0		0
Mr. N.	Agar	Regular	Student	24 Hrs.	3	Staph.	
Control	Agar	Regular		24 Hrs.	0		0



Photographs comprising an average plate selected from each of the accompanying series. Numbers refer to the series of the same number.

SERIES 16.

Culture of Hands Scrubbed 10 Minutes and Washed 1 Minute With 5 Per Cent Thymol in 60 Per Cent Alcohol

Mr. S.	Agar	Regular	Student	24 Hrs.	0		
Mr. T.	Agar	Regular	Student	24 Hrs.	1	Staph.	
Mr. W.	Agar	Regular	Student	24 Hrs.	0		
Mr. B.	Agar	Regular	Student	24 Hrs.	12	Staph.	
Mr. R.	Agar	Regular	Student	24 Hrs.		Staph.	★
Control	Agar	Regular		24 Hrs.	0		0

SERIES 17.

Culture of Hands; Socially Clean Plus 1 Minute Washing With Eupad.

(Chlorinated lime and boric acid, aa dram 1 in 1000 cc. of water.)

NAME	MEDIA	PROCESS	OCCUPATION	TIME	COLONIES	ORGANISMS	GROWTH
Mr. J.	Agar	Regular	Laborer	24 Hrs.	14	Staph.	
Mr. D.	Agar	Regular	Technician	24 Hrs.	53	Staph.	
Mr. B.	Agar	Regular	Student	24 Hrs.	10	Staph.	
Mr. A.	Agar	Regular	Student	24 Hrs.		Staph.	★
Mr. P.	Agar	Regular	Student	24 Hrs.		Staph.	★
Control	Agar	Regular		24 Hrs.	0		0

SERIES 18.

Culture of Hands Scrubbed 10 Minutes and Washed 1 Minute With Eupad.

Mr. R.	Agar	Regular	Student	24 Hrs.	0		
Mr. M.	Agar	Regular	Student	24 Hrs.	6	Staph.	
Mr. G.	Agar	Regular	Student	24 Hrs.	6	Staph.	
Mr. P.	Agar	Regular	Student	24 Hrs.	13	Staph.	
Mr. T.	Agar	Regular	Student	24 Hrs.	18	Staph.	
Control	Agar	Regular		24 Hrs.	0		

SERIES 19.

Culture of Hands—Socially Clean Plus 1 Minute Washing With Solution of Mercury Cyanide.

(Grn. 7 in 500 cc. of water.)

Mr. S.	Agar	Regular	Student	24 Hrs.	13	Staph.	
Mr. O.	Agar	Regular	Student	24 Hrs.	15	Staph.	
Mr. R.	Agar	Regular	Student	24 Hrs.	2	Staph.	
Mr. W.	Agar	Regular	Student	24 Hrs.	5	Staph.	
Mr. H.	Agar	Regular	Student	24 Hrs.	61	Staph.	

SERIES 20.

Culture of Hands Scrubbed 10 Minutes and Washed 1 Minute With Solution of Mercury Cyanide.

Mr. R.	Agar	Regular	Student	24 Hrs.	4	Staph.	
Mr. M.	Agar	Regular	Student	24 Hrs.	0		
Mr. G.	Agar	Regular	Student	24 Hrs.	6	Staph.	
Mrs. P.	Agar	Regular	Student	24 Hrs.	11	Staph.	
Mr. T.	Agar	Regular	Student	24 Hrs.	47	Staph.	
Control	Agar	Regular		24 Hrs.	0		

SERIES 21.

Culture of Hands; Socially Clean Plus 1 Minute Washing With Harrington's Solution.

Mercury bichloride	gm.	.8
Hydrochloric acid	cc.	60.
Alcohol	cc.	640.
Water	cc.	300.

Miss D.	Agar	Regular	Technician	24 Hrs.	0		
Mr. L.	Agar	Regular	Student	24 Hrs.	0		
Mrs. S.	Agar	Regular	Technician	24 Hrs.	0		
Mr. M.	Agar	Regular	Student	24 Hrs.	0		
Mr. F.	Agar	Regular	Student	24 Hrs.	1	Staph.	
Control	Agar	Regular		24 Hrs.	0		

SERIES 22.

Culture of Hands Scrubbed 10 Minutes and Washed 1 Minute With Harrington's Solution.

Mr. L.	Agar	Regular	Student	24 Hrs.	0		
Mr. S.	Agar	Regular	Student	24 Hrs.	1	Staph.	
Mr. C.	Agar	Regular	Student	24 Hrs.	0		
Miss H.	Agar	Regular	Librarian	24 Hrs.	0		
Mr. R.	Agar	Regular	Student	24 Hrs.	0		
Control	Agar	Regular		24 Hrs.	0		

CONCLUSIONS

1. Socially clean hands are invariably bacterially contaminated. The bacterial flora is most profuse under the nails, next around the cuticle, and least on the most exposed surface.

2. The reduction of bacteria by scrubbing is proportional to the time and the distribution of bacteria, as noted in conclusion[1].

3. Scrubbing is a valuable adjunct to disinfection of the hands but it is ineffectual alone.

4. Scrubbing is a valuable preliminary step, as is shown by comparision of results obtained with the various disinfecting solutions with and without preliminary scrubbing.

5. Of the substances used the order of their efficacy may be depicted as follows: Harrington's solution, 70 per cent alcohol, 5 per cent thymol in 60 per cent alcohol, mercury cyanide solution, eupad.

BIBLIOGRAPHY

1. Mil. Sur. March, 1922.
2. Zeitschr. Chem. Ind. Kolloide. May, 1922.
3. Zeitschr. f. Hygiene u. Infektionskrankh. 64:113, 1909.
4. Biochem. Zeitschr. 25:367, 1910.
5. Jour. Phys. Chem. 22:348, 1918.
6. Jour. Gen. Phys. 1:61, 1918.
7. Minn. Med. March, 1925.
8. S., G., and O. April, 1920.
9. J. A. M. A. Feb. 25, 1922.
10. J. A. M. A. Mar. 11, 1922.
11. J. A. M. A. July 26, 1924.
12. J. A. M. A. Nov. 8, 1924.
13. Zentralblatt fur Chirurgie, Leipzig. Sept. 26, 1924.
14. Lancet. March 8, 1924.
15. Am. Jour. Pub. Health. Sept., 1921.
16. Ky. Med. Jour. May, 1923.

PRENATAL CARE*

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The past decade has produced a marked drop in the maternal mortality of American obstetrics. This is due partially to the fact that the medical profession has gained a greater knowledge of what constitutes adequate prenatal care, and in part to the fact that on the whole, the pregnant American woman presents herself for care at a much earlier period in her pregnancy than was formerly her custom. In the past, the pregnant woman considered it enough were she to consult her physician in the last prenatal month, in fact the woman of twenty years ago, for the most part, saw her physician for the first time with relation to her pregnancy when he was called to deliver her.

The aim of a physician attending a woman through her pregnancy should be to have that woman, at the end of her postpartem period, in a state as near as possible to her condition before she became pregnant, and only care directed to this end can be called adequate prenatal care. Let us consider the initial visit of the gravida to her physician. This patient, besides being a woman and carrying the possibilities of any or all pathology common to her sex, is in addition, a pregnant woman, with all the altered physiology, the changed metabolic processes, and the increased demands on all the organs and systems, that this condition implies. It is the duty of her physician to acquaint himself completely with her physical and mental state and have it not only well in mind, but also in its entirety upon his records.

A complete history should be taken, and the age, occupation, gravida, and number of miscarriages carefully noted. In primiparæ especially are the number of years married and the menstrual history of importance, as they frequently give the accoucheur a hint as to the presence and type of pelvic pathology.

Much has been said concerning the necessity of inquiring into the history of the type and character of the labors of the patient's mother and sisters, but as we have no means of knowing what class of medical care they may have had nor of knowing how biased the history of a difficult case may have become through years of retelling, too much importance should not be attached to this data.

The patient's past history is of the utmost importance, and a story of the infectious diseases, anemia, rheumatic fever, etc., should place the examiner on his guard, lest he overlook some important physical finding which might alter his prognosis of a safe delivery and puerperium.

The type and character of the patient's previous labors, whether or not the babies were premature or over due, whether or not operative interference was necessary or hemorrhage followed delivery are extremely important facts for the obstetrician to know in every case when dealing with multiparæ.

The facts of the present pregnancy should be ascertained chronologically, the salient points being date and character of the last period, vomiting, headache, edema, vertigo, visual disturbances, condition of the bowels, appetite, sleep, leucorrhea, and, if it has been reached, the date of viability. An exceedingly careful physical examination should be made, starting at the head and ending at the soles of the feet.. The size of the breasts and the amount of gland tissue should be noted as some women fear they will be unable to furnish enough milk for their baby and a word or two of assurance will relieve much anxiety. If the breasts are deficient in gland tissue, stimulation by means of massage may be instituted, while if the nipples are flat or depressed, gentle traction on them several times daily should be advised so that they will be convex for nursing when the baby arrives. The heart and lungs should be subject to careful examination in order that the attendant may be able to anticipate any possible decompensation in the presence of a cardiac lesion and in order that an acute tuberculosis will not be missed. No patient should ever be allowed to go into labor without her physician being cognizant of any abnormality she may have, from septic tonsils to a small pelvic outlet.

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* Read before Portland City and County Medical Society, Portland, Ore., Oct. 7, 1925.

On bimanual examination, the height of the fundus above the symphysis, the presence of any pelvic pathology, the position of the uterus and the length and type of the cervix are to be determined. By type of cervix, I mean whether or not it is long, short, thick, thin, conical, straight, patulous or tightly closed. By keeping the type of cervix in mind as well as the size of the pelvis and presentation of the baby, in primiparæ at least a fairly definite prognostication of the length of labor may be made and the obstetrician who bears these things in mind can frequently save himself several hours of needed sleep at the time of confinement.

Pelvic measurements should be made at the initial visit and rechecked six weeks before the estimated date of confinement. The interspinous, intercrestal and internal conjugate are the essential measurements of the inlet, while the transverse of the outlet and posterior sagital should be taken for the outlet, but, in addition, the external conjugate and the bitrochanteric give added information concerning the shape of the pelvis. If the measurements are small and there is doubt in the attendant's mind as to the ability of a normal sized baby to pass through, a responsible relative should be told of the fact. The blood pressure should be taken, the weight charted, the pulse rate recorded, and if careful work is to be done, a red blood cell count and the hemaglobin examination made in order to guard against the anemias which are being found to be quite common during pregnancy.

If this examination is made in the last prenatal months, it is important to determine the fetal size, position and heart rate with a search for multiple heart tones and other diagnostic points of twin pregnancies.

The fetal mortality rate in breech delivery is considerably higher than in those with vertex presentations and it is desirable to have all cases, when possible, deliver as head presentation. During the last six weeks at least, the position of the baby can in all but the exceptional case, be determined and if there is a malposition such as transverse or a breech, gentle external cephalic version should be attempted. In the majority of cases, if done gently so as not to stimulate the uterus to contraction, and very slowly, the endeavor is successful and the baby will stay as placed. This, in primiparæ, is a valuable maneuver as a breech delivery in the average primipara is a serious procedure, especially if the pelvis is slightly small in its dimensions.

A careful examination should be made for abnormality of the thyroid function, either hypo- or hypertension because, since the attention of the medical profession has been drawn to the thyroid, we are finding many cases who develop thyroid dysfunctions during the prenatal period. While at the Crile Clinic I was impressed by the number of hyperthyroids who timed their first onset of symptoms of hyperthyroidism as coming either during or immediately following a pregnancy, and especially here in the Willamette Valley is this an important phase of prenatal care.

It is convenient for the practitioner to have a typewritten set of instructions which can be given to the expectant mother at her initial visit to the office and by which she can set her regime during her pregnancy. The list found in De Lee's text book is an excellent one and can be modified by the practitioner to suit his needs. A list of directions which I have found suitable, taken in part from De Lee, is as follows:

1. Dress warmly. Avoid circular constriction of any part of the body. As soon as child's motion is felt, abandon corsets; wear a maternity waist and a breast support.

2. Take plenty of mild exercise in the open air and sunlight, especially walking, stopping short of fatigue. Avoid violent motion such as golf, tennis, swimming, and long trolley or automobile rides, etc. Traveling is permitted only when absolutely necessary.

3. Take no extremely hot or cold baths, only tepid with cool sponging. In last four weeks before delivery, no tub baths; use the shower and sponge. Take no douches unless ordered and especially in

the last month, allow nothing to touch the internal genitalia.

4. Intercourse should be avoided if possible. Always restricted and absolutely forbidden the first three months and last six weeks and the week of each month when the menstrual period would normally have occurred.

5. There must be at least one normal bowel movement every day.

6. Unless otherwise directed, eat usual amount of food. Restrict the meats or their equivalents, poultry, fish and eggs to four ounces a day and these only four days a week. Eat plenty of fruit, green vegetables, especially spinach. Drink freely of water, milk and buttermilk, taking at least one pint of milk or buttermilk daily and making your fluid intake at least eight glasses a day. (This intake of milk is important because milk contains more available calcium than any other food and the growing fetus needs a large calcium supply. The green vegetables, especially spinach, furnish phosphorus which the fetus needs in order to adequately use the calcium.) No alcoholics. During the last six weeks reduce fats. Individual directions will be given you concerning meat.

7. Keep the breasts free from pressure. Bathe the nipples once a week with tincture of green soap, carefully washing them and drying them afterwards. Anoint them daily with albolene.

8. Once each week measure the amount of urine passed in twenty-four hours. It should be three pints or more.

9. Report either by telephone or office call when you are troubled with nausea, vomiting, headache, swelling of the feet or eyelids or if there is any deviation in your health from normal. Report to me also any marked reductions of the amount of urine and if there is hemorrhage from any part of the body.

10. Sleep on alternate sides. Daily in the last month knead the abdomen very gently for a few minutes to relieve the baby from a cramped position.

11. Make weekly visits to the office throughout your pregnancy.

12. When labor pains begin or if waters break or if blood stained mucus appears, notify me and go to the hospital.

13. Six weeks after delivery come to the office for examination.

14. One year after baby is born return with baby for "follow up" examination.

If these directions are explained both as to their exact meaning and the reasons for them, much better cooperation from the patient will be experienced. The opinion was previously wide spread, that were a pregnant woman to be seen by her physician every four to six weeks, that attention was adequate but it is now the general consensus of opinion that the visits should be at least every two weeks and in some cases weekly.

There are several reasons for this necessity. (1) It is a well known fact that retroversions of the uterus are quite common and it is an established truth that twenty-five per cent of all pregnancies end in miscarriages. One cause of miscarriage which occurs during the third month is the catching of the retroverted gravid uterus under the sacral promentory with a resultant expulsion of the uterine contents. Hence if the patient is seen during the first third of her pregnancy and a retroversion found, she should be seen frequently and the uterus replaced to the normal position each time, being held in place if necessary by an "S. H." pessary, and the patient instructed to assume the knee-chest position for five minutes night and morning. This replacement can best be done with the patient in the knee-chest position, by grasping the cervix with a tenaculum forcep, drawing it towards the vulvæ with light traction while the fingers of a gloved hand apply gentle pressure anteriorly on the posterior surface of the fundus. After the third month the uterus rises out of the pelvis and this danger is past.

(2) Nausea and vomiting of pregnancy which is found most frequently in the first trimester is often quite severe, with a resultant loss of weight. This weight should be recorded not less than biweekly.

(3) The gravest of all situations found by physicians caring for parturients is toxemia. It sometimes makes itself aparent like a bolt from the blue, and then again its advent may be detected only by subjective and objective symptoms. But it is really toxemia which, hovering over the head of our patient like the sword of Damocles, has caused us to realize that the pregnant woman should be seen frequently. If a frequent check is kept on the blood pressure, the urine and the patient, incipient toxemia may be detected in its infancy, but if the patient is not seen for three weeks or a month, considerable headway may be made by the disease and much valuable time lost. It is far better that ninety-nine normal women be seen needlessly, too frequently, than that one toxemic patient be allowed to go undetected until too late.

With regard to the treatment of the complications of pregnancy, I have taken up here only those more common ones which are peculiar in the main to the pregnant woman alone.

The nausea of early pregnancy frequently accompanied by nausea of varying degrees of severity is probably the earliest complication commonly calling for treatment. This nausea, while it is manifest in the morning in the majority of cases, may have its onset at any hour and in some cases the patient is able to retain little or none of her food.

In these cases, large doses of bromides, fractional feedings of dry foods (one feeding, consisting of several crackers or pieces of dry toast, being given a half hour before arising in the morning), and a diet rich in carbohydrates are sufficient and do much towards relieving that patient. In this connection let me state that, during her waking hours, an endeavor should be made by the patient to prevent the stomach from becoming either entirely empty or overfilled. If these palliative measures are insufficient, corpus luteum extract in any of its forms may be given hypodermatically. The water soluble extract in amounts of from two to four decigrams given intramuscularly daily for from five to ten days usually brings the desired results. These doses may be increased depending upon the severity of the case. With the more marked hyperemeses which do not respond to the foregoing routine, placental serum given in increased doses is advocated.

In many cases, especially those with doting parents or husbands, there is beyond doubt a strong psychic factor and they can be best treated if they are hospitalized, all visitors absolutely forbidden, and a stringent campaign of fluid intake and elimination instituted. The marked dehydration of these patients is noticeable and large quantities of fluid, given by hypodermoclysis if necessary for retention, work wonders in even twenty-four hours.

Of course in some cases no treatment meets with success, and due to the increased emaciation and loss of vitality, a termination of the pregnancy is imperative, but these fortunately are the rare cases. It is not uncommon that a patient will suffer intensely during one pregnancy, even to the necessity of a therapeutic abortion and will go through her subsequent pregnancies with little or no gastric disturbances.

As a prophylactic against the hypothyroidism of pregnancy, it is the general custom now to give iodine in some form throughout the prenatal period. Any of the iodine tablets such as Oridine or Iodostarine suffice. These tablets contain approximately ten milligrams of iodine and if given weekly are a sure prophylactic, although sodium iodide or any other iodide may be used. The thyroid gland is unable to utilize more than this amount and hence more frequent dosage is useless. The pregnant woman with hyperthyroidism presents a greater problem, as in some cases the progress of this condition is marked in spite of all treatment. We know that in any case of hyperthyroidism, palliative measures are uncertain and this applies especially during pregnancy. It is our desire to protect, if possible, our patient from surgical interference and for this reason she should be kept absolutely at rest and protected from all excitement and stimulation and her nervous irritability controlled by sedatives. As the last word in the treatment of hyperthyroidism has not been said and with various authorities arguing pro and con concerning Lugol's solution and other iodine preparations, we can only treat each individual hyperthyroidism of pregnancy as her individual needs dictate.

Just a word here concerning the pituitary. A great many of the prenatal headaches, formerly attributed to toxemia are now known to be due to a hypertrophy of the pituitary during pregnancy. Numerous autopsies on pregnant patients have domonstrated that this gland enlarges considerably during the period of gestation and it is illuminating to watch the visual fields shrink during pregnancy and enlarge after parturition. Anterior pituitary substance given by mouth will relieve this type of headache.

More and more men dealing with parturients are gaining the belief that the postpartum pyelitis has its incipiency during the later months of pregnancy and becomes evident following delivery. At intervals of from four to six weeks if careful prenatal work is to be done, it is wise to draw a catheterized specimen of urine for microscopic examination and if a pathologic number of pus cells are found, prophylactic means against pyelitis taken.

Into the theories as to the causation of eclampsia and into the various forms of treatment of this condition, I will not go. It is sufficient here to consider some of the more important signs and symptoms and the more simple procedures for their alleviations.

All pregnant women are potential eclamptics, and she whose systolic arterial tension is consistently higher than 130 mm. should be considered a probable toxemic. It is wise to limit the protein intake of all pregnant women and to forbid meat, fish and eggs to the majority in the last months of pregnancy. While there are some well argued theories that the protein intake has nothing to do with toxemia, it has been found in a number of large maternity dispensaries that a careful watch kept of the blood pressure and a nonprotein, salt-free diet, used when this starts to ascend, has decreased to a large extent the number of cases of eclampsia. From her first visit the patient should be urged to drink water with eight glasses a day as a minimum. This not only keeps the urine at a low specific gravity but also aids us in the prophylaxis against pyelitis and cystitis. If the systolic pressure starts to rise, magnesium sulphate is given bi- or triweekly, or daily by mouth, depending upon the severity of the case. Should the blood pressure rise above 150 mm. systolic, the patient should be hospitalized, placed on a high carbohydrate diet and given 20 c.c. of a 10 per cent magnesium sulphate solution intravenously daily, supplemented by at least 3000 c.c. of fluid by mouth until the arterial tension is again normal. If the pressure rises in spite of treatment or should convulsions occur, the eclamptic routine devised by McNeile may be used. It is attended by a mortality of 9 per cent and briefly is as follows:

1. Twenty c.c. of 10 per cent magnesium sulphate intravenously as soon after first convulsion as possible; repeated every hour after until convulsions are controlled.
2. Blood pressure to be taken every hour after convulsions are controlled, and if blood pressure begins to rise, nearing its height at time of convulsions, magnesium sulphate repeated, also repeated if convulsions recur.
3. Patients who are comatose or very restless in a semicomatose delirium and whose blood pressure is falling, should receive chloral hydrate, 20 gr. (1.3 gm.), and sodium bromide, 60 gr. (4 gm.) by rectum.
4. Utmost quiet to be observed and nurse to be constantly with patient until latter is out of coma.
5. Oxygen inhalations to be given after each convulsion until breathing is normal.
6. All patients to be prepared for delivery as soon as they are quiet enough to do so.
7. If patient is in labor, use nitrous oxide gas for pain.
8. If in second stage of labor and proper progress is not being made, low forceps extraction for version, with the consent of attending obstetrician.
9. Termination of pregnancy is indicated only when symptoms persistently recur and do not respond to treatment.
10. Cesarean section is only used for absolutely obstetric indications.

LOCAL ANESTHESIA

AS APPLIED TO SURGERY IN A SMALL HOSPITAL, THE OFFICE AND THE PATIENT'S HOME*

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In this message no attempt will be made to discuss the merits of local over general anesthesia. Both have their places and their advocates, and until the ideal anesthetic is found and accepted there will continue to be arguments for and against each. It will be granted, I think, that local anesthesia has its indications, and at times the most ardent general anesthesia enthusiast will recommend it or is requested to use it.

It is the writer's purpose to call attention to the expediency and practicability of the local anesthesia method by discussing the equipment, training and technic which may be applied to surgery in a small hospital, the office or the patient's home. In this manner he hopes to encourage surgeons in rural communities and those associated with the smaller hospitals to more generally accept this valuable adjunct in their practice either in or out of the hospital.

The writer wishes to acknowledge his indebtedness to Dr. Robert Emmett Farr of Minneapolis with whom he was associated for over three years for his teachings of surgery and local anesthesia, and also to Dr. P. D. Peabody, Chief of the Peabody Clinic of Webster, South Dakota, with whom association offered the opportunity of sharing the surgical service in a sixty-bed hospital in a town of two thousand inhabitants. Dr. Farr is a well-known enthusiastic advocate of the method, and Dr. Peabody was found to be friendly toward it, a prime requisite for its development and use. The service with Dr. Peabody was such that it presented the opportunity for many of the observations upon which this paper is based, the work being carried out in a rural community two hundred and fifty miles from the Twin Cities. Here the usual hospital and office surgery was found, as well as the occasional need of operating within the patient's home.

EQUIPMENT

The opinion commonly held that the surgeon, in order to do surgery under local anesthesia must have an elaborate special equipment is erroneous. Those who do much of their work by this method believe that the required armamentarium should in the main merely be the pride of every surgeon using any kind of anesthesia. It is granted that the large metropolitan hospital should be considered ill-equipped without the best adjustable illumination, comfortably padded operating tables having both lateral and longitudinal tilts with well padded shoulder-high and lateral braces, as well as comfortable wrist restraints and arm-rests. This leaves for the surgeon only the acquisition of instruments which will permit of more gentle manipulation of the viscera, and this has been found done most easily by first gaining good exposure with elastic retraction, and then using the longer-handled instruments instead of the hands.

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The above requirements which may be considered "ideal," should be expected as a matter of course in a metropolitan hospital, and "illumination," "comfort," "tilting," "exposure," "elastic retraction," "gentle manipulation," "long-handled instruments" have all been repeatedly stressed by Dr. Farr in his writings, and the reader is referred to these directly.

It would be the exception rather than the rule to find the "ideal" equipment just mentioned in the rural or all small hospitals. In our own experience modifications of those on hand may be made. The thin hard operating table pad may be replaced by a thick comfortable feather-tick properly covered. The wrist and arm restraints may also be padded. The knees and thighs may be held in restraint with a wide canvas from another wide band of canvas which really forms a hammock for both patient and feather-tick keeping them from slipping when the head is lowered. To prevent slipping when the head is raised, it is equally easy to swing a hammock beneath the feet if the foot-piece of the table is not adjustable.

Readiness for tilting may be demanded at any time during general anesthesia. Painless restraints may help reduce the occasional palsy following general anesthesia. A comfortable bed for even the unconscious individual is only humane. Therefore the requisites for comfort in surgery under local anesthesia must be accepted as merely essential precautions against neglect to the patient, awake or asleep.

The best of light is none too good for both the surgeon and the patient, and its requisite for local anesthesia should be no greater than for general. Where an elaborate lighting system is not available, a spotlight intelligently directed will reflect passably for the inspection, but is perhaps not efficient for work within the cavity. Then the small sterilizable type of lamp may be used advantageously within the abdomen as with other types of anesthesia.

The long-handled instruments of all types, the soft rubber-tipped intestinal "thumbs," the elastic retractors, etc., are often referred to as special equipment peculiar to local anesthesia, but these are good instruments for surgery under any kind of anesthesia for their use promotes gentle handling of the viscera, a principle frequently stressed by Farr and others because roughness and local anesthesia are incompatible.

The only special instrument needed (and one which might even be included in the essential equipment of the average surgery without imposing a hardship) for doing surgery under local anesthesia is an injection apparatus. Unquestionably the pneumatic injector as developed by Farr has the advantage of leaving the hand free from fatigue, gives one a finer sense of feeling with the point of the needle, keeps one orientated in doing an infiltration block, and adds speed to one's technic. It is not my intention to in any way detract from its usefulness. However, the lack of such a modern injector should not prevent a surgeon from using the local method.

Ordinary syringes of ten cubic centimeters size with an assortment of fine needls ranging from three to twelve cm. in length may be used. Or a compromise between the simple syringe and the pneumatic injector may be found in the automatic type of syringe (Dunn) equipped with the self-seating bayonet-lock needles which prevent the disconcerting shower baths which follow separation of the ordinary needle and syringe.

Thus, to repeat, an operating table equipped for the patient's comfort, painless restraints, readiness for tilting in all directions, a good light (adjustable to suit the tilt), modern surgical instruments and retractors are standard equipment. The lack of an injecting device should not be considered a prohibitive feature for surgery under local anesthesia in rural or small hospitals, where the equipment on hand can be developed into "essential" though not "ideal" without any great hardship.

TRAINING

The necessity for the surgeon being specially trained in the use of local anesthesia before he feels capable of applying it in his everyday work has been a stumbling block in its adoption, and yet the principles of local anesthesia can be gained in a short time by observing clinics where the method is used.

The fact that surgery under local anesthesia does require a special operative technic must not be confused with the necessity, so-called, of special or superfluous equipment. This technic demands a smooth painless induction of the anesthesia. To accomplish this sharp needles, the use of subdermal wheals after the first injection, and the avoidance of jerking are essential. It demands comfort for the patient as already mentioned. It demands ample incisions, and no tearing of the tissues upon entering the abdominal cavity, and aims at securing a "negative intra-abdominal pressure" by careful retraction and finally securing the desired exposure by the help of gravity (tilting) if necessary. Gentleness is demanded at every turn. The above keynotes have all been sounded by my former chief and my own experiences only corroborate his teachings.

The successful performance of surgery under local anesthesia in its final analysis hinges upon a sympathetic attitude of the surgeon toward the method. It has been admitted by teachers of local anesthesia that some patients are psychically incompatible with the method, and it is only to be expected that some surgeons are likewise not in sympathy with the same. To them this paper will have little appeal.

Closely allied with the sympathetic attitude of the surgeon to the local method is his development of "teamwork" with his assistants, the hospital nursing staff in general and the operating room force in particular. In this the surgeon of the rural community or in a small hospital may have a distinct advantage over surgeons attending large metropolitan hospitals in that he may be in position to dictate his own policy. As an indication of teamwork nurses should avoid mentioning anything that might prejudice the patient against the local method, or in fact, against any other method, should the patient be curious. On the other hand if the nurse knows the surgeon's plans she may do much to ease the patient's mind by showing her approval of the method, or she may casually have the questioner visit with a patient, recently successfully operated upon under local anesthesia, for conclusive information.

PSYCHOANESTHETIST

Aside from the cooperative attitude of the floor nurses, the surgeon's assistants and the operating room force, the importance of the nurse directly attending the patient during the operation must be given special mention. This individual to be most valuable is also a trained anesthetist with a practical understanding of the science of mental phenomena. In other words she is a practical psychologist as well as an anesthetist, and for that reason the term "psychoanesthetist" was coined by Farr, and is widely used in his as well as the writings of others. This member of the team must have a sense of humor as well as genuine sympathy to the extent she will not let the surgeon hurt the patient. She never uses the word pain or any others that might suggest it, and must be able to discriminate between real and fancied pain. If the former presents and cannot be eliminated, she must be prepared to give general anesthesia. Her duties begin with the patient's entrance to the hospital by a visit to the bedside, and if any nurse is to "sell" local anesthesia to the patient, she should be the one delegated. She is the special nurse during the operation; giving sips of water; sponging the itching nose (which frequently follows the hypodermic of morphine and atropine); adjusting the arm-rests, shoulder-braces, knee-holders, etc.; recording the pulse, blood pressure, the amount of solution injected and entertaining the patient with music or conversation, at the same time instructing how to co-operate and be of assistance to the surgeon. Here it may be added that some patients dislike both music and conversation, but a good psychoanesthetist quickly learns his likes and dislikes and when efficient removes the "strain" which many surgeons object to in local anesthesia methods.

The rural surgeon here again has an advantage over the surgeons of large metropolitan hospitals. The latter, as a rule, do not have the same anesthetist regularly, and in but few instances are they recognized as psychoanesthetists—a definite entity. The co-operation of the anesthetists with the surgeons who are trying to use local anesthesia is now entirely optional, and at times indifferent as shown recently in one of my own experiences in a metropolitan hospital. I was starting an operation under local anesthesia at about six-thirty in the evening, and was asked by the general anesthetist if I would need her services. My reply was that I did not think so, but would appreciate having an anesthetist available. Her reply was that she left at seven, and I did not see her again. Fortunately a student nurse supplied the "psycho" successfully and the anesthetist was not needed.

TECHNIC

No attempt will be made to explain all of the methods of producing local anesthesia. Suffice it to say that the infiltration and infiltration block combined with intra-abdominal infiltration (anterior splanchnic) methods are in the writer's opinion preferable for most cases, and the reader is referred to such texts as Farr, Braun, etc., for the detailed descriptions. The solution used heretofore has been a 1 per cent. novocain with adrenalin, but recently the eucupin-tutocain-adrenalin solution introduced by Takats (S. G. O., July, 1926) is being tried because of its prolonged anesthetic action. It is only to show the practical application in the hospital, office or patient's home that some of the special procedures, such as the sacral, brachial and transverse infiltration blocks, will be mentioned. The first two have been described frequently in articles and texts, and will not be repeated. The transverse infiltration block, however, will be described later in the hope that its simplicity will attract more to the use of it.

Sacral Block and Cystoscopic Examinations. Sacral block is decidedly a hospital procedure. The technic for the injection can be mastered by the surgeon with comparatively few demonstrations, and if he follows the directions and precautions of the descriptive texts he should experience little difficulty. This form of anesthesia offers a great aid in cystoscopic examinations, and in perineal or rectal surgery, and is mentioned particularly because of the former. It is needless to venture that cystoscopic examinations without anesthesia are extremely painful, especially in the male, and topical applications are not always sufficient as evidenced by my experience with three physicians, who after examinations in as many different places, declared they would never again submit to such torture. In one instance, however, the doctor's condition became desperate, and he reluctantly consented to a kidney lavage giving the sacral block a trial. Following this he has since submitted to a dozen or more similar procedures with the same anesthesia. The rural surgeon or his urologist will therefore do well to accept sacral anesthesia and apply it to every male patient for at least the first cystoscopic examination, and he will be much more likely to have the patient return for further observation. This was the routine followed in our own cases, and not a single one failed to return for subsequent treatment when advised to do so.

It is true that even in women the initial instrumentation can, in most instances, be done with merely a bladder instillation of two or three ounces of a 2 per cent novocain solution, and the follow-up cystoscopy in the male can also be done satisfactorily with a combined urethra-bladder instillation of the same strength solution. In our own small series of seventy-three cystoscopic examinations during the year 1925, the sacral injection was used in thirty-one, and the instillation method in the remainder.

Brachial and Other Forms of Local Anesthesia for Office Procedures. The value of local anesthesia as an adjunct to office practice needs hardly be mentioned, as a large majority of the profession has already accepted it, and some of our experiences will be tabulated later showing its practicability in minor cases. Simple infiltration or infiltration block usually suffices for such cases as in draining abscesses; removing foreign bodies (here the patient under local anesthesia has on several occasions helped locate the elusive thing); repairing accidental lacerations; amputating fingers or toes; excising warts, sebaceous cysts or tissue for biopsy; circumcisions, etc. In addition, the brachial block can be made especially helpful to the surgeon in that it offers a way for him to be his own anesthetist when the occasion demands, particularly for the reduction of Colles' fractures which may come to his office. The writer found that as a result of having used this type of anesthesia for the reduction of such a fracture he was shortly requested by another patient with the same condition to use brachial anesthesia. The victims of the fractures were neighbors, and the recommendation of the first to the second would tend to justify some merits of the method. The use of the brachial block is, of course, not limited merely to treatment of Colles' fractures, but provides anesthesia for the entire forearm and hand. It is not a difficult or mysterious bit of technic, and deserves more general use.

Transverse Infiltration Block. Transverse infiltration block refers to a method of producing anesthesia of the extremities by injecting a plane of solution completely across the limb proximal to the elected site of operation. The anesthesia produced is suitable for such procedures as amputation, removal of foreign bodies, reduction of fractures, etc., and in the upper extremity may be used to reinforce a brachial block if necessary. The technic for the injection calls for a circumferential subdermal infiltration of the part making subdermal painless wheals for the successive needle-punctures. Then the solution is injected completely across the limb making use of the already anesthetized skin and keeping the needle moving while injecting so that its point may not be lodged in a vessel. An effort is made to bathe the large nerve trunks without trying to "spear" particular ones, and for this reason most of the fluid should be placed where the larger nerves are known to lie. A tourniquet may be applied over or proximal to the plane of injection and aside from hemostasis, this will inhibit absorption, thereby prolonging the anesthesia.

LOCAL ANESTHESIA IN THE PATIENT'S HOME

In the modern age of comfortable and speedy automobiles and the ready access to ambulances, even in the country, it is almost unnecessary to consider surgery of any kind in the patient's home. Occasionally, however, it is demanded, as in the following cases. The first was that of an aged man with a failing heart. This was complicated by gangrene of the left foot caused by embolism. Its onset was sudden, and the pain was very severe. It was felt that moving the case fifty miles to the hospital in midwinter was not without immediate danger. Therefore, an amputation of the leg was done in the home, using the transverse infiltration block mentioned above without upsetting his general cardiac condition.

The second case was one of carcinoma of the urinary bladder with metastasis to the spine and pelvic bones. Rapid growth had resulted in a mass the size of the man's head over the region of the left ilium. This was causing severe pain from pressure. Under local anesthesia, using simple infiltration, and without removing him from his home an incision was made over the fluctuating tumor. A pint of necrotic debris discharged, and more continued to follow with relief of pain as in the previous case until he succumbed to his hopeless malady.

COMMENT

The expediency and practicability of using local anesthesia in a small hospital, the office and the patient's home, will be shown in the following self-explanatory tabular review of the surgical cases treated during the year 1925:

		Major cases	Writer's cases	Writer's major cases
Surgical cases requiring anesthesia	506	266	264	135
Surgical cases given local anesthesia	350	132	219	101
Surgical cases given gen. anesthesia	152	130	41	30
Surgical cases given mixed (local and general)	4	4	4	4

It is granted that in not all of the above cases in which local was used was there a contra-indication to general anesthesia. But it is evident that only by improving one's technic on the average cases does one develop the confidence to go ahead with the critical ones in which narcosis may be definitely avoided. The writer's major cases referred to above included operations for the removal of the appendix, gall bladder, kidney, prostate, uterus, thyroid, hernia, breast tumor, ureteral stone, hemorrhoids, portion of rib, etc. However, the only groups of cases in which all were started under local and completed satisfactorily with it were hernia (sixteen cases), hemorrhoids (twelve cases), cystotomies (five cases) and cystoscopies (seventy-three cases).

CONCLUSIONS

The conclusions which it has been the writer's aim to develop are:

1. Surgeons in small hospitals can adapt their equipment to suit the requirements of the technic of local anesthesia by maintaining a modern standard equipment.

2. The "ideal equipment," though desirable and making for more enjoyment and facility in the work, is not an absolute necessity.

3. Special technic, rather than special equipment, must be striven for in doing surgery under local anesthesia.

4. The perfection of this technic to the point where one can apply the local method with assurance when indications arise that demand it, is best secured by using it more frequently in the average run of cases.

5. Brachial, sacral and transverse infiltration blocks are emphasized as valuable procedures which surgeons might more generally add to the simple local infiltration methods already adopted.

Localization of Chickenpox Lesions at Site of Previous Skin Tests. Edgar E. Martmer, Detroit (Journal A. M. A., June 4, 1927), reports the case of a medical student, aged 20, who, February 5, had been exposed to chickenpox. February 10, he was tested with four toxins; at point A he received Dick toxin; at B, measles toxin (Ferry); at C, puerperal sepsis streptococcus toxin, and at D, erysipelas streptococcus toxin. The following day he showed a reaction to all the toxins except the measles toxin. Having had measles, this was to be expected. By the following day the reactions had disappeared. February 19, he complained of a headache and some soreness of the throat, and February 20, he developed a typical chickenpox eruption. In this case there was no reappearance of the reaction to the various toxins used, but rather a localization of the chickenpox lesions in those areas in which reaction had occurred.

RAILWAY OPHTHALMOLOGY*

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Because of certain problems and practices peculiar to itself, railway ophthalmology has come to be recognized as a distinct entity in the realm of general ophthalmology. While this short resume is almost entirely of personal experiences and rather elementary in character, it is hoped it will give to those interested a more or less comprehensive view of this particular offspring of ophthalmology, especially as practiced on the Oregon Short Line Railway, one of the grand divisions of the Union Pacific System. In the small percentage of accidents to both passengers and employees this company has a most enviable record among the larger railroads of the United States.

A railroad, aside from its general obligation to the public as a common carrier, has a threefold duty and responsibility: (1) to the traveling public, (2) to its employees and (3) to itself. Any and all of these responsibilities can be served only by the employment of intelligent men, physically fit, and with excellent vision.

The oculist is first concerned with the examination of the applicant for employment on the system, to see that his vision and color perception meet the required standards, and that there are no internal or external ocular conditions present that might operate against the employee's present efficiency, or be liable to incapacitate him in the future.

All applicants for railroad employment on the Union Pacific System, excepting track and construction laborers, are required to pass a physical examination which consists of two parts, an eye and ear test, and a general physical examination. For the eye test the applicants are divided into three classes, A, B, and C. One must be continually vigilant in making these examinations. Substitutes present themselves to take the examination for those who fear failure in passing the tests; others with defective vision will have memorized certain lines on the test card, and even those with well fitting artificial eyes have passed examinations with normal vision to their credit. One applicant, on whom a Mule's operation had been done, had passed the test and accepted positions in the train service of two other railroads. He confessed to having memorized several of the charts. His well fitting artificial eye had escaped detection altogether.

Class A includes employees in all branches of the train service or who have any duties in connection with the operations of trains as enginemen, trainmen, train porters, switchmen, etc. Entrance to service in this class requires 20/20 vision in each eye, tested separately, without glasses.

Class B includes, among others, signalmen, yard masters, dispatchers, telegraph operators, hostlers, etc. Entrance to this service requires 20/20 in one eye and not less than 20/40 in the other, with or without glasses.

Class C includes car inspectors, engine inspectors, station agents, yard clerks, and most of the great army of shop employees. Entrance to this service requires 20/30 in one eye and not less than 20/40 in the other, with or without glasses.

All applicants for positions in the train service, and those who by reason of their occupations are required to interpret color signals, must pass a satisfactory examination in colors. Approximately 3 per cent of such applicants are found with defective color vision. The members of the colored race seem to be better equipped by nature for detecting colors than their white brethren, for of all those examined for train porters and other positions requiring color tests, we have found but two who have been color blind.

In addition to examinations for entrance into service and for promotion, all dining car and hotel employees are re-examined every three months, and all employees in the train service are given a periodical re-examination for vision and color every two years. Any applicant, regardless of classification, who presents evidence of trachoma, central opacities of the cornea, incipient cataract, glaucoma, etc., is rejected regardless of the state of vision.

Only by the employment of healthy, intelligent men can an efficient organization be built up and maintained, and it is only with such an organization that the modern railway can operate efficiently and at the same time minimize the possibility of accident to the traveling public, employees and trespassers. Upon his assignment to duty the new employee will find that not only has the railroad company provided every means to safeguard him from injury to his eyes, but also that ample provision has been made for his relief in case of injury.

Hospital facilities are found at convenient points on the system. At Pocatello, the medical department for the care of its thousands of employees there and in adjacent territory, has one of the best equipped emergency hospitals in the West, located in the railroad yards, right in the midst of all activities, and operated day and night under the care of experienced nurses. At the Pocatello General Hospital facilities are maintained for caring for any and all kinds of cases requiring hospitalization. A division surgeon, and two assistant surgeons, for the general work, and an oculist and aurist for the special cases, are located here. In fact, nothing is left undone for the comfort and proper care of employees needing medical or surgical attention.

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* Read before Yamhill-Polk-Marion County Medical Society, April, 1927.

In the way of safety devices, goggles (figs. 1 and 2 to protect eyes from) flying particles, chemicals, babbitt metal, etc., hoods (fig. 3) with protecting lenses for workers using acetylene torches and electric welders, and screens (fig. 4) to protect workmen employed on hazardous jobs in close proximity to each other are among some of the devices provided by the company. These mechanical devices together with the instruction and supervision of the safety-first department, however, would amount to little if it were not for the interest maintained in this work by employees in all branches of the service from the highest official to the rank and file worker.

Every employee in the company shops is required to wear goggles when performing hazardous duties and the rules governing their wearing are mandatory. Persistent violation means dismissal. Formerly there was considerable objection to the wearing of goggles, the workmen complaining that the lenses became dirty and steamed over, thus interfering with the vision, or they were too heavy. None of these objections is serious, and all are certainly more than counterbalanced by the great amount of good they do. Examination of a pair of goggles worn for any length of time will show the surface of the lenses cut in many places by flying particles, some of which undoubtedly would have entered the eyes and any one of which could have caused serious and perhaps fatal injury if goggles had not been worn.

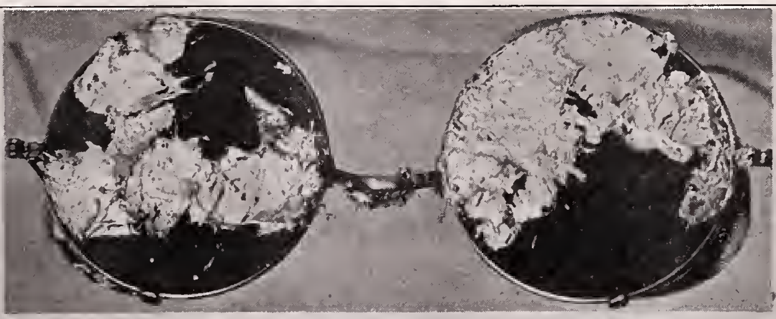


FIG-1.

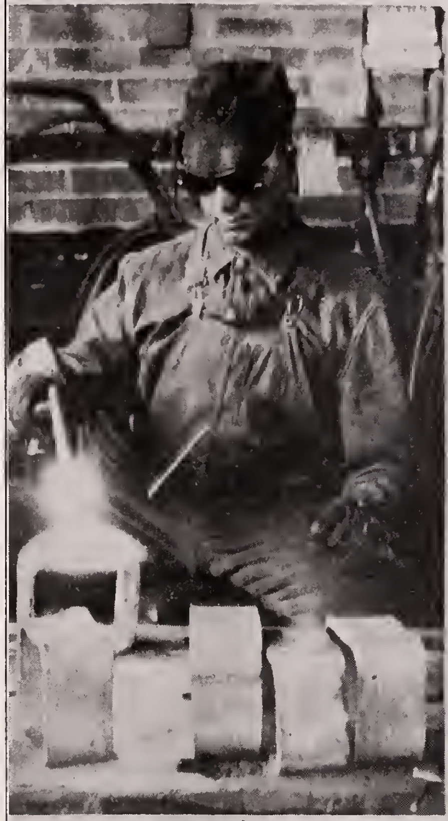


FIG-2

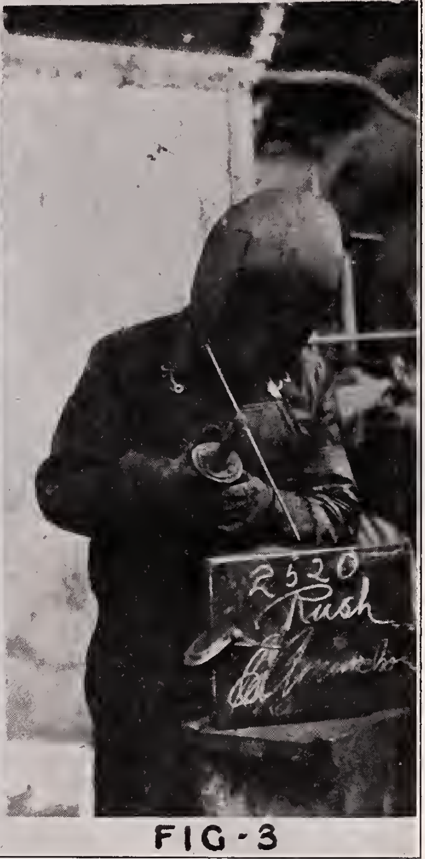


FIG-3

Fig. 1. A pair of goggles that saved a pair of eyes from flying molten babbitt.
Fig. 2. Welding with oxy-acetylene torch, blacksmith shop, Pocatello, Idaho.
Fig. 3. Hood and goggles worn by electric welder. Also note canvas screen to protect other workmen from the rays of the arc.

The point has also been raised that when a heavy piece of metal strikes and breaks a goggle lens, particles of glass are liable to enter the eye. As a matter of fact such is not the case, and I have only seen one case in which glass had entered the eye in this way. In fact, even with the wide spread wearing of spectacles today, and the many lenses that are constantly being broken, glass is one of the rarest ocular foreign bodies with which we have to deal. A glance at the illustration (fig. 5) of goggles broken by impact of large objects, without injury to the eye will convince the most skeptical of their great usefulness.

If in spite of all precaution an eye is injured or is attacked by any of the various ocular diseases, it is the oculist's duty to treat the eye so indisposed as carefully and expeditiously as possible, so that the patient can return to work in a normal or as near normal condition as is compatible with the character of the injury or disease and as soon as possible, in order that the economic loss to himself and the company shall be the smallest possible. This, however, does not mean that the oculist must use undue haste in releasing his patients.

That the close cooperation between the medical department and the safety first departments has been productive of results is shown by the report of the Interstate Commerce Commission for 1925 during which year the Union Pacific System had the lowest accident frequency to employees on duty and passenvers carried of any Class I railroad of comparable size.

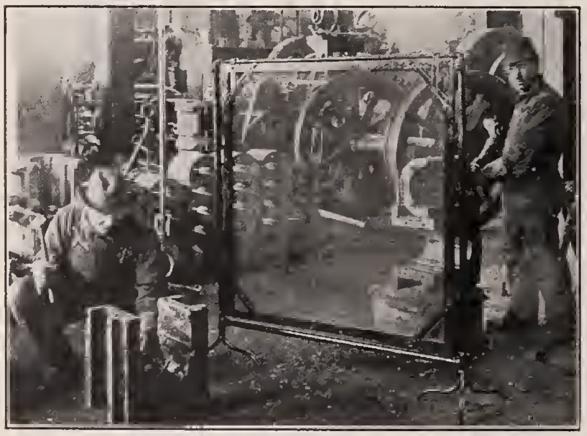


Fig. 4. Screen to protect workmen from flying chips, babbitt, etc.

The greater part of the work of the railroad ophthalmologist, so far as surgical work goes, has to do with the minor injuries, such as foreign bodies, burns and like injuries of the eyeball and its appendages. The men have learned that the time to treat an injury of the eye is as soon as possible after it happens, and there is but little delay in their presenting themselves for treatment.

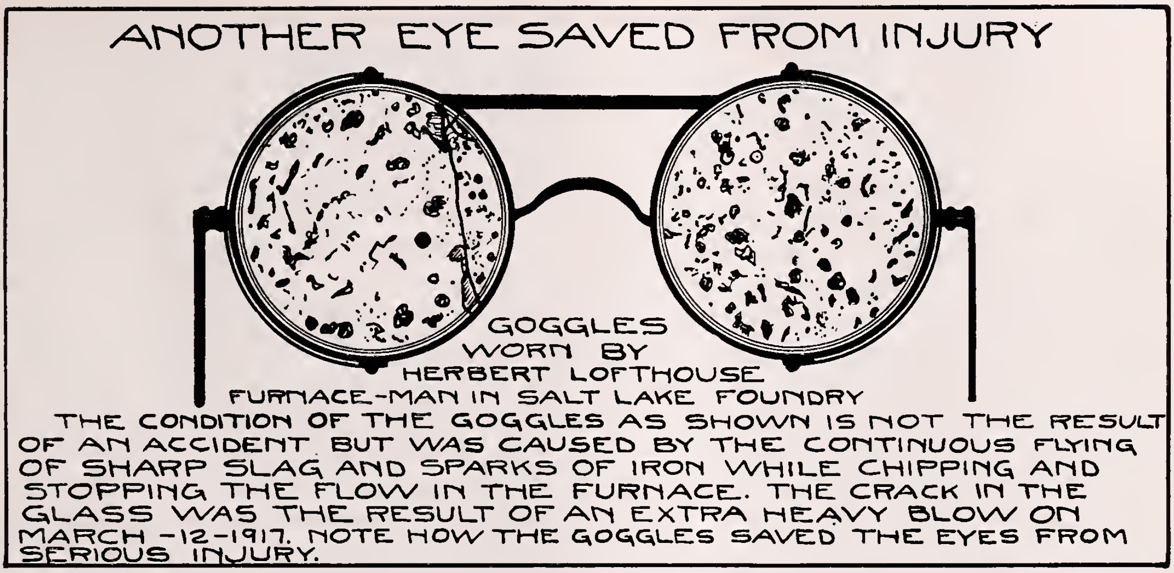
Immediately after an accident, the patient, if able to do so, makes out a detailed report of same, and if the case is ambulatory, he is given an order and sent to the oculist at once. If a foreign body be present, it is located, the eye anesthetized, and the foreign body removed by means of spud or cotton wound applicator. Very fine particles embedded in the cornea can be removed very readily and with a minimum of trauma by means of the point of a Grafe knife. After removal of the foreign body the eye is flushed with boric solution, and a few drops of metaphen solution is instilled. The patient is always advised that there will be some scratching after the anesthetic wears off. No bandage or dressing is applied in the more trivial cases, which means the eye is not bandaged in the majority of our cases. A prescription containing butyn, adrenalin and boric acid is usually given the patient for hourly use until the cornea is healed. After making a report and obtaining a release from the medical attendant, he is sent back to work. If the trauma has been more extensive a dressing is applied after treatment and, in addition to the butyn solution, he may be given a 20 per cent solution of neosilvol. Argyrol is not used because it stains the denuded area of the cornea. The patient, on looking into a mirror, discovers a dark area and thinks the foreign body is still present and it is not always easy to convince him of its complete removal.

If the accident occurs at night the patient is treated at the emergency hospital by the nurse, who removes the foreign body if possible, gives first aid in all cases and calls the oculist at once if the injury is serious, and if not, refers the patient to his office in the morning for examination or treatment and release.

One thing that should be positively prohibited in localities where a physician is located, and especially where an oculist can be consulted is the touching of an injured eye by a fellow employee. Many foreign bodies are of course removed by fellow workmen and other laymen, some of whom have acquired considerable skill perhaps in that work, but, because of the entire lack of knowledge of antiseptic precautions, septic ulcers are likely to result.

Very little time is lost by employees on account of foreign bodies. By prompt removal of the offending objects, and sterilization of the eye, the average case loses but a few hours. A great many of the injuries are in those who are disregarding the rules by not wearing goggles or where the foreign body has entered the eye of an employee engaged in some work that does not require them to be worn.

Ophthalmia caused by flashes from electric welders and acetylene torches is very painful and the



ANOTHER EYE SAVED FROM INJURY

GOGGLES
WORN BY
HERBERT LOFTHOUSE
FURNACE-MAN IN SALT LAKE FOUNDRY

THE CONDITION OF THE GOGGLES AS SHOWN IS NOT THE RESULT OF AN ACCIDENT BUT WAS CAUSED BY THE CONTINUOUS FLYING OF SHARP SLAG AND SPARKS OF IRON WHILE CHIPPING AND STOPPING THE FLOW IN THE FURNACE. THE CRACK IN THE GLASS WAS THE RESULT OF AN EXTRA HEAVY BLOW ON MARCH -12-1917. NOTE HOW THE GOGGLES SAVED THE EYES FROM SERIOUS INJURY.

Fig. 5.

photophobia is intense. While these cases, in spite of the intense symptoms, usually recover promptly by the use of cold compresses and a solution of butyn, adrenalin chloride and boric acid frequently instilled, the prognosis should be guarded, as permanent corneal, lenticular and retinal changes are possible. Under the simple treatments outlined above these cases usually return to work within forty-eight hours.

Because of the care exercised in the selection of men for employment, and the use of safety devices, major eye injuries have become a minor part of our work, but a very important one. Unfortunately we do see extensive and perforating wounds of the eyeball, rupture of the eyeball or some of its tunics, intraocular foreign bodies, etc. Many of these more serious injuries are found in the class of employees who are not compelled to wear goggles, e.g., track laborers.

All major ocular surgery should be done only by thoroughly competent surgeons, of which there are several stationed at convenient points on the railroad. Whenever an intraocular foreign body is suspected an x-ray localization is made. If the foreign body is anterior its removal is attempted through the wound of entrance by means of the giant magnet. If posterior, the extraction is done through a scleral incision as near localization point as possible. When not extractable enucleation is advised. Even where the foreign body is removed and the immediate vision is good we find in many cases that the vision subsequently becomes gradually dimmed and perhaps lost altogether.

Occasionally it happens that an employee who has had but a trifling injury will make exaggerated claims of disability and may even claim total loss of vision. In such cases it will require all the skill and diplomacy of the oculist to detect the malingerer. An accurate record of the case and its treatment with a careful estimation of the condition of the eye and its vision at time of discharge is one's greatest protection against such claimants. Without reflecting upon the integrity of any employee, the oculist should consider every accident case that presents itself, a potential suit for damages and guard himself accordingly.

Many nonindustrial eye conditions are constantly presenting themselves. All the various acute and chronic infections such as trachoma, corneal ulcers, iritis, cataract, choroiditis and retinitis are seen from time to time.

Every modern means is used in the diagnosis and treatment of these conditions, consultation is always available and is freely used. When hospitalization is necessary, as already stated, ample modern facilities are provided here and at other convenient points. The railroad company does everything humanly possible to prevent injury and disease, but when one of its employees is afflicted it places at his disposal its entire medical equipment and insists that he be treated in a considerate and interested manner, in the best way known to modern science. It costs more money to give its patients the very best treatment but in the end the actual saving is great. The saving is in loss of time, in legal expenses and adjustments of compensation, not to mention the saving in wages to the employee and his family.

CLINICAL OBSERVATIONS ON LOCAL IMMUNIZATION*

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The recent English translation of Besredka's monograph on "Local Immunization"[1] will undoubtedly bring to the attention of numerous workers in this country the results obtained by him and his coworkers on various phases of local immunization. While the laboratory workers are more or less familiar with his views, it is the clinical investigators who will be interested especially in the practical application of these principles.

The theory as advocated by Besredka and his followers is that for each disease there is a certain receptive tissue which acts as the normal portal of entry for the virus and that a solid protection is conferred upon the individual by a process of "desensitization of the receptive cells." As Gay[2] has pointed out, efforts to duplicate his experimental results have not met with uniform success in the hands of other workers nor is his explanation of the observed facts altogether acceptable. From a practical standpoint, there has been widespread application of his principles in cutivaccination against anthrax, apparently with marked success (Brocq-Rousseau and Urbain, Nevodoff, Nicolas, Tatin and Velu, etc.). Similar results have been claimed clinically for a number of infections. In prophylactic immunization against bacillary dysentery, cholera, typhoid and paratyphoid, oral bilivaccination is considered equally as efficacious as the subcutaneous inoculation of vaccine, while the use of "pansements" or compresses soaked in autogenous vaccine or in antivirus and applied locally to the affected tissue has been the chief method used in attempts at localization against other infections. Reports of successful use of this technic in cases of furunculosis, carbuncles and phlegmonous processes, erysipelas, osteomyelitis, blepharitis and conjunctivitis, soft chancres, infections secondary to carcinomata of the breast and cervix uteri, and many other infections have appeared in large numbers in the French literature although a few are also found in German works. In England and in the United States little attention has been paid to local immunization. Hays[3] has reported success in the treatment of a series of antrum cases with autogenous vaccines used locally but we have been unsuccessful in finding other clinical data. In connection with the experimental work on local immunization there are several phases of the subject which are as yet unsettled. It would hardly be advisable to proceed further along the same experimental lines unless the clinical results were sufficiently encouraging. Through the cooperation of Drs. H. Morrow and N. N. Epstein of the Dermatology clinic and Dr. J. W. Crawford of the Eye clinic of the University of California Medical School and of Dr. G. Selfridge, who has used our filtrates on a number of private patients, we are able to give a preliminary report of the value of local immunization by Besredka's antivirus in a small number of patients.

The technic used in preparation of the antivirus is similar to that of Besredka. The material is plated out on blood-agar plates and the predominating organism transferred to a bottle of broth. In our work Huntoon's hormone broth and glucose-veal broth have been employed, using 100 to 200 c.c. amounts as a rule. With hormone broth ten to twelve days of incubation produces an antivirus which is inhibitive for the original organism but with glucose-veal broth we find that sixteen to eighteen days gives better results. After incubation the culture is passed through a Berkefeld filter and the filtrate tested for sterility. A test-tube of the filtrate is also inoculated with the original organism to test its inhibitive action. When prepared as above, the antivirus-containing filtrate is found to possess a strong but not absolute inhibitive action (e.g., staphylococcus) against the staphylococcus, but the other organisms are only slightly retarded if at all. The original organism will be found to multiply so as to form a slight flocculent precipitate in the bottom of the tube while the supernatant media remains clear. Microscopically the precipitate appears as an amorphous mass of debris, but when plated out typical colonies form. On the other hand if an unrelated organism is inoculated into the tube of filtrate there will be uniform growth throughout. A filtrate which is found to be sterile and inhibitive is now ready for use. On account of the ease with which it may become contaminated we have made a practice of adding a drop of tricresol as a preservative. The method of application varies with the type of case to be treated.

Forty cases have been under observation at one time or another, but the difficulty of proper follow-up observation limits the number from which definite conclusions may be drawn to a much smaller number. A brief resume of some of these cases follows:

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* From George Williams Hooper Foundation for Medical Research, University of California Medical School, San Francisco.

Case 1. *Sychosis Vulgaris*, both sides of face, two years duration. During that time various methods of treatment have been employed without improvement. Organism: pure culture staphylococcus aureus. Patient treated consistently with antivirus over period of three and one-half months with absolutely no improvement. The antivirus was applied as compress, usually for period of an hour at a time, and the interval between treatments was varied but without effect. The antivirus seemed to be of some value at first but the end-result showed no change for the better.

Case 2. *Recurrent Furunculosis.* An antivirus compress was applied to a new furuncle appearing on the neck and left in place over night. The process was entirely arrested, the area becoming firm and indurated. Antivirus appeared to be of definite value in causing an abortion of the acute process.

Case 3. *Acne Vulgaris*, limited to the face, three years duration. Organism: pure culture staphylococcus albus. Antivirus applied with definite improvement for a short period of time but its continued use showed no definite change in the condition.

Case 4. *Chronic Conjunctivitis*, with recovery of mixed culture of staphylococcus albus and staphylococcus aureus. Antivirus made from both organisms, mixed, and used as instillations. Condition appeared worse after three applications but was continued for four more treatments without any improvement.

Case 5. *Chronic Conjunctivitis and Blepharitis* of six years duration. Organism: pure culture staphylococcus aureus. Use of antivirus over a prolonged period of time was without permanent benefit.

Case 6. *Chief complaint*: *Sandy-feeling Lids.* Staphylococcus albus was the only organism isolated. Application of antivirus four times was followed by definite subjective improvement and after four more applications patient was discharged as cured.

Case 7. *Chronic Conjunctivitis* of four months duration. Staphylococcus albus was the only organism isolated. Application of antivirus for a period of two weeks was followed by repeatedly negative cultures but there seemed to be no change in the condition.

Case 8. *Chronic Antrum Infection.* The antrum was irrigated ten times with antivirus with very definite improvement. This patient later had an acute exacerbation accompanied by rise of temperature for 48 hours but the condition cleared up promptly.

Case 9. *Chronic Antrum Infection.* Four irrigations with the antivirus was followed by slight improvement.

Case 10. *Chronic Antrum Infection.* Ten irrigations with antivirus were followed by no improvement so a radical operation became necessary.

Cases 11 and 12. *Both of these Chronic Antrum Infection.* Both of these cases responded favorably to four irrigations with antivirus and were much improved.

COMMENT

The case reports give a fair idea of our experience in the clinical application of Besredka filtrates. In practically all cases there was a prompt response to the application of the filtrate but in only a few was any lasting benefit derived. Permanent improvement seems to follow in acute or subacute cases while many of the chronic cases remain refractory. The greatest drawback to the procedure as employed in our studies was the long interval of time required in the preparation of an autogenous filtrate. Undoubtedly stock filtrates could be employed but we feel that false deductions might be drawn from the use of such a technic. Another possibility for clinical use lies in the preparation of a polyvalent filtrate made from various strains of organisms but here again we feel that the fundamental facts concerning the value of the filtrate are as yet unproven. The difficulty of applying scientific methods to clinical investigation is always a serious factor in any study and more data are needed before definite conclusions can be drawn. The failures in our series of cases were all in patients who had failed to respond to other treatment; the few successful cases seem to indicate some value in the method, and we feel that further studies should be pursued along the same line.

BIBLIOGRAPHY

1. Besredka: Local Immunization Specific Dressings. Translation. Williams and Wilkins Co., Baltimore, 1927.

2. Gay: Path. and Lab. Arch. Med., 1:590, 1926.

3. Hays: Arch. of Otolaryngology, 1925, II, p. 321.

NONUNITED FRACTURES

THEIR ETIOLOGY AND TREATMENT*

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Any discussion of the etiology and treatment of nonunion of fractures, which pretends to be complete, would require much more time than can be allotted this paper. Such a discussion leads into the fascinating field of the growth, repair and regeneration of bone. Investigation into these fields has occupied some of the brightest minds in surgery for over one hundred years and only within the past ten years have they been brought to a point of rather general agreement.

ETIOLOGY

In going over the literature on the subject of nonunion, it is interesting to note that each observer stresses certain causes which, when analyzed, have been the predominating factors in his series of cases While all agree that there are several causes for nonunion, no two series of cases seem to show the same proportion of cause.

This small series of sixty-nine cases then is not presented as a final settlement of the causes of nonunion in the order of their frequency, but simply as they happened to come to me, very largely from the accidents incident to the lumber industry, the most common source of severe injury in Western Washington.

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* A paper, illustrated with lantern slides, read before Pacific Northwest Medical Association, Spokane, Wash., June 29, 1926.

For some unknown reason, the books always stress nonunion due to syphilis, tuberculosis and malnutrition. There can be no doubt but that a fracture might take place through a gummatous area of bone, though I personally have never seen such a fracture. My bone cases have had routine Wassermann tests and inquiries into history of specific infection for the past eleven years, and show in the neighborhood of 20 per cent positive. There has been no single case in which, in my opinion, nonunion could be attributed to this cause. On the other hand, union in the syphilitic takes place with great regularity. Tuberculosis or malnutrition have never appeared to be a cause, though many of these cases have sustained bone injury. Pathological fractures rather habitually unite if the recipient lives long enough for union to take place.

Congenital pseudoarthrosis is probably a periosteal aplasia or displasia and will not be considered.

First in the list of etiological factors is interposition of muscle or other tissue. This is the typical pseudoarthrosis toward which we strive in our arthroplasties. The condition is one in which a false joint has formed and requires the removal of intervening tissue, the opening up of an area of reasonably normal bone in either fragment, and accurate fixation of the fractured ends by any method which produces firm fixation and will not, at the same time, inhibit regeneration of bone, but rather stimulate osteogenesis.

Mechanical displacement or actual loss of substance, while not a common cause of nonunion in civil life, occasionally follow severe compound fractures and were common enough cases during and after the World War. This type of case naturally carries great devitalization of tissue and impairment of blood supply to the bone, muscle, tendon and nerve injury. Henderson's statistics from the Mayo Clinic, between 1919 and 1925 of two hundred fifty-nine cases, show 35 per cent within this class.

Union in bad position of one of the paired bones, e. g., the fibula in the leg, may cause nonunion in the tibia, or malunion of one of the bones of the forearm may result in nonunion in the other. A dislocation of the radius is a common cause of nonunion in fractures in the upper third of the ulna.

Muscle pull on paired bones, particularly the lower third of the foream, is frequently a cause of nonunion.

There is a large group, with history of repeated former operations designed to produce anatomical alignment and fixation by wire, plates, nails or bone pegs, all having a common factor in the introduction of nonabsorbable foreign material and of added trauma to the original trauma of fracture. There is no doubt that introduction of foreign material slows down or inhibits bone regeneration. They have no place in the modern treatment of fractures. Repeated trauma, either operative or too frequent attempts at reduction following simple fracture, seem to increase the liability of nonunion. Inadequate or poorly conceived bone transplantation may be included in this group.

Lastly, there is the puzzling group in which constitutional disease cannot be considered a factor. In these, either with or without operation of any kind, alignment is perfect, fixation has been well conceived and prolonged, and stimulation of regeneration has been carried out by carefully supervised physiological use. Either no callus is thrown out in these cases or the callus is abundant and remains soft. Following the work of McCollum on calcium and phosphorous metabolism in rickets, Peterson in 1924 published clinical observations of ununited fractures with special reference to the calcium and phosphorous content of the blood. Normal blood contains about 3.8 mg. of phosphorous per 100 c.c. and about 9.8 mg. of calcium. He believes that when these two multiplied together give a product of less than 36, that nonunion is common. The lower the product, the more common is nonunion.

During 1925 and 1926, we have made phosphorous and calcium determinations on all our fracture cases. In several cases of fractures, in which nonunion did not occur, there has been a low calcium content. I judge there may be compensating factors in most cases. The subject is comparatively new and is at least worthy of careful checking in fracture cases. Efforts should be made to raise the calcium and phosphorous content by proper diet and medication in cases in which a deficiency is demonstrated.

TREATMENT

Nearly ten years ago, during the height of the Lane plate craze, I read a paper at Victoria before the North Pacific Surgical Association, in which I predicted that the time would soon come in which all nonabsorbable material for internal fixation of fractures would be discarded. This was not so long after the wide use of these materials in the Panama Canal Zone. Many of the older men of much greater experience were convinced this was the accepted method of treatment. The argument was whether to plate the first day or later. Today, I doubt if anyone could be found to advocate these methods before an intelligent meeting. The late results of nonabsorbable bone fixation in many of the cases, irrespective of who uses them or how they are used, is enough to condemn them.

Open bone work, whether for the few cases which should be operated early or for nonunion, then resolves itself into plastic and transplant work. The early case with interposition of tissue may require only incision, freeing of fragments and replacement in good position with impaction, if possible.

Nonunion fracture is best treated by one of the various methods of bone transplantation. Time does not permit of a lengthy discussion of the fate of transplants and the theories of bone union after their use, but I believe the experimental work of Haas, reported in 1923 and 1924, may be taken as a guide. He experimented with fractured whole metatarsal bones of dogs, transplanted into the muscles of the back. When endosteum was removed entire from both fragments, the periosteum remaining intact, the fractures united. When periosteum was removed entire, the endosteum remaining, union still resulted, though more slowly. When periosteum and endosteum were both removed entire, no more than a feeble fibrous union resulted.

Periosteum or endosteum is then necessary for viability of a transplant. Otherwise, the transplant acts as a temporary support only and while it may be invaded by osteoblasts from the host, which eventually produce its complete absorption and result in a union of the fragments of the fracture, its osteogenic properties are lost.

In a series of over thirteen hundred ninety collected cases reported by McWilliams in 1921, union took place when intramedulary transplants were used in 60 per cent of the cases only. It is generally recognized that this is the least useful form of transplant.

Some of the reports of the osteoperiosteal transplants give as high as 95 per cent of successful results. I have used it in a few special cases only. It gives virtually no fixation and personally, I have used it in cases in which fixation was of secondary importance, as in spine cases. It would seem that Albee's dictum of periosteum to periosteum, cortex to cortex and endosteum to endosteum is well founded. Most of my work in the past seven years, since the war, has been with this in mind and I confess a weakness for the inlay graft. Henderson's massive graft does not differ greatly in theory. He stresses the osteogenetic properties of cancellous bone, which after all is largely endosteum and secondly, the increased strength of large masses of bone for purposes of fixation, while union is taking place.

Mitchell reports seventy nonunited fractures operated with what seems to be Henderson's method, with 95 per cent union. From my own experience, I should prefer the inlay of very generous size.

Campbell's method of transplantation in the humerus and femur appeals to me very strongly. I see no harm in these difficult cases in adding an osteoperiosteal transplant about the seat of fracture. The so-called diamond shaped transplants in the forearm appear logical. MacLennon of Vancouver has used them with satisfaction. I have no personal experience.

SUMMARY

There are a few points about bone transplantation anywhere in the body which seem to me essential:

1. A wide incision through the skin and superficial tissues.

2. Separation of muscle planes, rather than through muscles.

3. Separation of periosteum and tissues attached to the fragments over one side of the fracture only, so as to have the blood supply intact.

4. Removal of fibrous tissue and of sclerosed bone between the ends of the fragments.

5. Accurate fitting of the transplant to the host.

6. Splinting in plaster over a long period, until such time as the fragments and transplant have fused and the circulation through both fragments and the transplant is adequate.

BIBLIOGRAPHY

1. Mitchell: Brit. J. Surg., Oct., 1922.
2. Waring and Milligan: Brit. J. Surg., 1921.
3. Petersen: J. Bone and Joint Surg., Oct., 1924.
4. Henderson: Ununited Fractures, J. A. M. A., A. M., Jan. 9, 1926.
5. Henderson: The Treatment of Ununited Fractures. Anals of Surg., April, 1921.
6. Campbell: Treatment of Ununited Fractures. Amer. J. of Surg., Jan., 1923.
7. Haas: The Importance of the Periosteum and the Endosteum in the Repair of Transplanted Bone. Arch. Surg., Mar., 1924.
8. Haas: Fractures in Transplanted Bone. S. G. O., June, 1923.
9. McWilliams: The Values of the Various Methods of Bone Grafting, Judged by 1390 Reported Cases. Anals Surg., Sept., 1921.

BRAIN ABSCESS

REPORT OF TWO CASES

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Case 1 (fig. 1). B. W., girl, ten years of age, had an acute middle ear and mastoid abscess. Mastoid operated upon. Wound healed in two weeks. Patient was sent home entirely well. One week later, March 19, 1927, patient was brought to my office complaining of some pain in back and left arm. No headache.

Examination. Left eye, Ptosis of upper lid, eyeball slightly protruding, pupil dilated, vision 20/200, sees double. The ophthalmoscope showed papillitic edema. Patient walked without difficulty. Sent home to be kept in bed for a day or two and to report at the office again. On the following morning at 4 o'clock the patient was seized with severe spasmodic pains in the back and arm. At this time the parents noticed that the patient had no use of her right wrist and ankle.

On arriving at the home, I found the patient screaming with pain in the back and arm, but no headache. Temperature 97°, pulse 50. Diagnosis: Abscess on the left side of the brain.

The patient was taken to St. Joseph's Hospital. The radiographs of the head showed no evidence of abnormality. Leucocyte count was 28,700. Spinal fluid cell count, 2.5 per c.c. Many R. B. C. Globulin increase, probably due to blood caused by puncture.

On March 22, 1927, it was decided to trephine for exploratory examination. Ether aneasthetia was used. A curved incision through the skin, muscle and periosteum was made over the temporoparietal region, above the auricle. The cranium was opened one inch above the center of the external auditory meatus, and a circular one inch size opening made. On lifting up the plate of bone the dura bulged through under great pressure from within. On palpation distinct pulsation was felt, which indicated that there was a large abscess in the sphenotemporal part of the brain. A half-inch horizontal incision was made in the dura, the brain forced through the incision and a long narrow bistoury was introduced through the convolution of the protruding brain to a depth of fully one and one-half inches. Before entirely withdrawing the bistoury from the wound, thick greenish pus forced out and spurted about six inches from the wound. The dura incision was slightly enlarged and the pus kept flowing. If it could have been measured, it would have amounted to two or three ounces. When the pus stopped flowing, the abscess was swabbed gently with sterile gauze, and then packed with one-half inch wide iodoform gauze. Externally the wound was dressed with powdered iodoform and gauze around bone cut and dura to prevent any reinfection of the meninges from pus flowing from the wound, loosely covered with sterile gauze and bandaged.

At the conclusion of the operation the patient appeared in good condition, while applying the bandage the patient cried out, "Let my head alone." Patient was returned to bed. Coffee protoclysis was used all night to lessen shock if any followed the operation. She had a fair night and appeared in good condition the following morning.

March 23. The first dressing was done under nitrous oxide aneasthetic. Packing was removed from the wound, more than one ounce of pus being evacuated. Wound was repacked with iodoform gauze and sterile dressing applied. Smear from pus shows a few pus diplococci, the culture was negative. Smear from intrascranial serous fluid, occasional pus cell, occasional diplostreptococci found. Smear from inside skull. No pus cells found, occasional diplostreptococci.

April 12, 1927. Smear from pus in the brain abscess. No organisms found.

Progress: Within forty-eight hours from primary operation all motor paralysis disappeared. Ptosis was much improved, dilatation of the pupil decreased. Before the operation, she could count figures at two feet, vision now very much improved. Reaction of pupil, though sluggish, responds to light and shade. In less than a week the patient was able to be up and about. Appetite improves daily. Patient is becoming stronger and normal in every way.

At present date, April 20, 1927, the abscess seems entirely clean of pus, only clear serum flows when wound is dressed. The external wound is rapidly granulating and closing up. Vision of eye 20/20. Since the operation the patient has never had any pain in the head, back or arm. Progressing to rapid normal recovery.

Subsequent dressing of the abscess after March 23 to May 6 was done every morning, always using the encephaloscope with the obturator, introducing it in the abscess gently, thus preventing any trauma to the brain tissue while swabbing and packing the abscess. Each day showed improvement. Necrosis and pus decreased steadily, and packing of iodoform gauze was lessened as the abscess became smaller. On May 8 the wound was entirely closed. During the entire course of treatment, the patient never complained of pain in the head while the abscess was being dressed or between the time of dressings.

FIG-1

FIG-2.

The patient's general physical condition improved daily, mental condition normal with no evidence of possible complications. On May 28 the external skin wound had completely closed by granulation.

Case 2 (fig. 2). On April 13 I was called to see Miss E. F., at St. Joseuh's Hospital, who was in a semicomatose condition.

Three weeks prior to admittance to the hospital, the patient had complained of some earache on the right side with no discharge or mastoid complication. She had been going to school for two weeks before she developed a severe frontal headache, vomiting, loss of appetite and feeling indisposed.

On April 9 Dr. Garnett was called to the house to see the patient. Examination of urine was normal. He gave her some medicine for the headache and vomiting. The patient was gradually getting worse. On April 12, Dr. Garnett called and found her suffering a great deal from headache and vomiting. He suspected some intracranial complication and sent her to St. Joseph's Hospital. On April 13 she was much worse and in a semicomatose condtion. A spinal puncture was made. Clear cerebralspinal fluid came under great force. The patient seemed better after withdrawing a test tube full of the fluid. The cell count was 90. The pathologist's diagnosis admitted the possibility of one of three things: tuberculous meningitis, anterior polimeylitis or a brain abscess. To this the doctors agreed with the predominance of opinion leaning to an abscess in some part of the brain. My diagnosis was derived from the fact that the child suffered earaches on the right side three weeks previously, also from several headaches and vomiting. Temperature was 97°, pulse 60. Pupils were dilated and expression of the face anxious. The diagnosis was a cerebral abscess in the temperosphinoidal fossa. An operation was done at 12:30 p. m., April 13, 1927.

Operation: A curved incision was made one inch above the external auditory meatus, through skin, muscle and periosteum. Periosteum was elevated and a one-inch trephine opening was made above the center of the external auditory meatus. On removing the cortex, the dura was exposed. It was apparently normal, but was under a great deal of pressure. On palpation, distinct pulsation could be felt. A one-half inch incision was made in dura through which the brain protruded. With a narrow pointed bistoury, a plunge was directed slightly upward, forward and inward. Some bleeding followed but no pus. The bistoury was then withdrawn and reintroduced in the same opening with the point slightly upward, backward and inward one and one-half inches deep in the brain. Upon rotating it on its axis in the same position dark green pus shot out.

Whiting's cephaloscope was now introduced in the same cut to a depth of about one and one-half inches in the brain. On withdrawing the obturator no pus followed. On withdrawing the instrument to about one inch from the surface a large quantity of fluid pus flowed out. It was estimated at about one and one-half ounces.

The abscess cavity was packed with narrow iodoform gauze through the cephaloscope. The dura and bone opening were protected with a separate piece of iodoform gauze. Iodoform gauze was placed over entire wound and it was dressed surgically.

April 14. The first dressing of the abscess was done under nitrous oxide aneasthetia. On removing the packings from the abscess and introducing the celphaloscope, tipping the point a little forward, another pocket of pus was encountered which flowed through the celphaloscope to the amount of an ounce. After emptying the abscess thoroughly a one-eighth inch iodoform gauze was introduced through the celphaloscope and the abscess cavity was filled lightly as the instrument was withdrawn to the surface. Subsequent dressings of the abscess were done every morning with the celphaloscope introduced and the abscess cavity gently swabbed with cotton applicators. For the first few dressings some pus and necrotic tissue were wiped out. Each day it became less. At the end of ten days all pus and necrosis had subsided. One could see the clean convolutions of the brain closing together as the celphaloscope was withdrawn from the wound.

On the sixteenth day after the primary operation the opening in the brain was entirely closed. By the twenty-fifth day the scalp wound was closed.

The most remarkable feature of this case was that the patient never complained of any pain while the wound was dressed, not even when the celphaloscope was introduced one and one-half inches into the brain. All of the preoperative symptoms improved or were entirely relieved within twenty-four hours after the operation and the child improved daily without a single complication. The patient became perfectly normal mentally and physically.

In this case, the abscess being smaller than that in Case I, it responded with more rapid recovery. In less than three weeks the abscess and the external wound were entirely healed and the patient was discharged.

In the year 1917, I operated on two similar cases, with the ones reported and treated in the same manner. Recovery was rapid, with physical and mental conditions becoming normal and remaining so to the present day. I attribute the 100 per cent normal recovery in the four cases I have had to the after-treatment and to the use of Whitings celphaloscope with the obturator.

Production, Collection and Distribution of Human Milk. B. Raymond Hoobler, Detroit (Journal A. M. A., une 4, 1927), reviews the accomplishments of the Detroit Bureau of Wet Nurses of the last ten years, during which time the bureau has handled 668,347 ounces of human milk. They have gone far enough in this to know that an almost unlimited amount of human milk can be secured; there is a vast potential source of breast milk which is waiting to be tapped. A study of the output of many producing mothers is convincing that there exist many mothers who are quantity producers by nature and others who are minimum producers, equally by nature, and that for every mother who produces less than enough to nourish her infant properly there is one who produces enough both for her own child and to supply the deficiency of the other. In other words, there is a potential supply, so that if evenly distributed every infant might have its natural food. Hoobler believes that if every infant during its first month of life could be fed on wholesome breast milk, the death rate during this precariious first month would be greatly reduced, and the morbidity of the following months of the dangerous first year would be much diminished. Bureaus have been established in at least twenty centers of population scattered from Boston to Los Angeles. It is not too much to expect that every large city supporting a maternity hospital may become a center of human milk collection and distribution. Intervening areas may be served from these centers. The Detroit bureau successfully delivered milk to Fort Wayne, Ind., a distance of several hundred miles. The bureau has a large potential supply of milk always available for use, and practitioners within twelve hours' shipping distance from Detroiti are invited and urged to make use of their facilities. Huuman milk has been dried and fed with good results. This suggests a suitable disposition of excess quantities. The Detroit bureau is contemplating installing a drier so that they may have on hand a supply for emergency use in case their demand exceeds their supply. The shipment of the dried product would be simplified and permit them to serve a wider area than now.

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EDITORIAL

THE CLINICAL USES OF EPHEDRINE

From time to time a drug, which man has used empirically for years or even centuries, is subjected to pharmacologic investigation and its value established on a more rational basis. Such was the history of quinine, the isolation of which from cinchona bark followed a long period of successful employment of the crude form.

Ma Huang is a native drug which was described in Chinese medical writings as long as 5100 years ago. Oriental native physicians, both past and present, have valued it highly as a diaphoretic, circulatory stimulant, antipyretic and as a sedative in cough. It is prepared from a common Chinese herb, known as Ephedra vulgaris. In 1887 Nagai isolated from the crude drug an alkaloid which he named ephedrine. Following his discovery of the active principle of Ma Huang, a few sporadic experiments were performed by other investigators. Attention was focused mainly on the mydriatic effect of ephedrine. Its other clinical possibilities remained largely unexplored.

To Chen and Schmidt[1] is due the credit for reisolation of ephedrine and intensive pharmacologic and clinical study of its properties. These researchers, working in the laboratories of the Peking Union Medical College, noted the close similarity in the structural formulæ of epinephrin and ephedrine. They were not surprised subsequently to find that the action of ephedrine on the sympathetic nervous system of laboratory animals was almost identical with that of epinephrin. Certain differences they considered of importance. Ephedrine was effectively absorbed from the gastrointestinal tract. It had a weaker, though more prolonged effect than did the extract of adrenal gland. Solutions of ephedrine proved to be very stable, resisting light, air exposure and even boiling without change. The toxicity of the drug was extremely low. With repeated doses there was a tendency to loss or reversal of action, at least in animals.

In dogs, cats and rabbits, the following phenomena of ephedrine were established. Blood pressure was raised, the effect lasting several hours. Simultaneously, the strength and rate of cardiac contraction were increased. Smooth muscle of intestine became relaxed, uterine muscle contracted. Experiments on bronchial muscle were incomplete, but in general no relaxation was caused by ephedrine, except following preliminary physostigmine contraction.

Chen and Schmidt tested ephedrine in a number of clinical conditions. A patient in postoperative shock was given 40 mgm. of the drug, with resultant restoration of his blood pressure and general state to normal. In a patient with Addison's disease, 100 mgm. doses elevated blood pressure for a period of two hours and improved the patient's subjective symptoms. It may be stated here that Rowntree and Brown[2] have since given ephedrine a thorough trial in fourteen cases of Addison's disease, with disappointing results.

Middleton and Chen[3] have reported further clinical studies of ephedrine. Twenty-five patients having bronchial asthma were given capsules containing doses of 50 to 100 mgm. during the acute attacks. Nine (36 per cent) of these were completely relieved, eight (32 per cent) were improved and the remainder were uninfluenced. In two additional patients, the drug seemed to be useful in preventing asthmatic attacks. In several instances epinephrin stopped paroxysms where ephedrine had failed. They were convinced that, on account of its stability, low toxicity and the possibility of peroral administration, ephedrine should prove of considerable value in the treatment of this disease.

The mydriatic effect of ephedrine was also investigated by Middleton and Chen.[3] A 10 per cent solution produced sufficient dilatation of the pupil in thirty to sixty minutes to permit a satisfactory examination of the fundus. This could be used where cocaine was contraindicated, as in glaucomatous patients. Accommodation was not impaired and desquamation of corneal epithelium did not follow. Addition of 0.1 per cent homatropine to the solution shortened the period for complete dilatation to ten or fifteen minutes. Combining 10 percent ephedrine with 0.1 per cent atropine caused prolonged mydriasis but the period of cycloplegia was brief.

For shrinking swollen nasal mucosa Cook[3] found a weak solution of ephedrine effective and practically nonirritating. Hempstead, according to Rowntree and Brown,[2] points out the fact that the action of ephedrine is prolonged and not followed by compensatory dilatation. For this reason he has found it of value when added to the local anesthetic used in tonsillectomy. He believes that it may help to prevent postoperative hemorrhage.

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[1] Chen, K. K. and Schmidt, C. F.: The Action of Ephedrine, the Active Principle of the Chinese Drug Ma Huang. J. Pharm. & Exp. Ther. 24:339 (Dec.) 1924.

[2] Rowntree, L. G. and Brown, G. E.: Ephedrine Therapy in Addison's Disease Endocrinology, 10:301 (May-June) 1926.

[3] Middleton, W. S. and Chen, K. K.: Ephedrine: A Clinical Study. Arch. Int. Med., 39:385 (March) 1927.

Hay fever has been benefited by ephedrine, in the experience of Gaarde and Maytum.[4] Of twenty-six patients who were given two to three 60 mgm. capsules daily, thirteen obtained complete or almost complete relief and five testified to partial relief.

The tendency of ephedrine to produce subjective symptoms has been noted by practically all investigators of the drug. This is especially true when doses of 100 mgm. or more are employed. The complaints most frequently made are those of palpitation, tremor, weakness, sweating, sensation of warmth or of chilliness, nausea, vomiting and dizziness. In addition, cardiac extrasystoles or arrythmia have been observed. With reduction of the dosage the symptoms disappear in most patients. Some individuals seem to prefer to endure the discomfort of the milder reactions in exchange for the marked relief of the condition for which the drug has been administered.

Numerous other clinical and experimental studies of ephedrine have been completed or reported in progress. Since the drug has been proved to have a very low toxicity it is entirely safe for any practitioner to investigate its merits in his own patients. Thus far, in spite of its limitations and objectionable features, it shows promise of becoming a valuable addition to the resources of the physician.

SEATTLE AS A MEDICAL CENTER

For many years Seattle has been desirous of becoming the medical center of the Northwest. The population of Seattle has been increasing rapidly during the past five years and all the present indications are that within the next ten years it will nearly double in population. The medical profession of Seattle has felt for some time that plans should be made to establish a medical center in that city. With this in view a comprehensive survey has been made by the County-City Hospital Committee of the King County Medical Society. Mayor Landes, who has taken an active interest in the County-City consolidation, has appointed this committee with Rev. Mark A. Matthews and Dr. E. T. Hanley to represent the city on a general committee. A fund of approximately one thousand dollars was raised by voluntary subscriptions from the members of the County Society and Dr. R. G. Brodrick of Piedmont, Calif., Director General of the Alameda County Hospital, was brought to Seattle for the purpose of making a general survey of the hospital situation. His report will soon be in the hands of the committee.

The committee of the King County Medical Society was appointed by Dr. Frank Maxon, President of the Society, in January, 1924. Since that time several attempts have been made to interest doctors, looking toward the endowment of private hospitals, none of which have succeeded, however. The committee has made a survey of the private as well as the public hospital situation.

Mayor Landes has enlisted the Federated Women's Clubs in Seattle in her campaign for a new County-City Hospital. An institution, similar to that recently opened in Oakland, Calif., may be expected as a result of the survey and the active part taken by the women of Seattle to secure a new hospital.

The Medical Center: With a new County-City Hospital and one or two large private hospitals Seattle will immediately challenge the superiority of the other cities of the Northwest as the logical center for medical teaching. The University of Washington has as yet no medical center and it is a question whether one will be established within the next ten years. Eventually the people of the city will demand a medical school at the University. The erection of the new hospitals will probably take this into consideration.

THE BOISE PACIFIC NORTHWEST MEDICAL ASSOCIATION MEETING

Distance prevents the physician of the Northwest from making visits to great centers of medical teaching as frequently as his more conveniently situated eastern colleague. Recognizing this handicap, the Pacific Northwest Medical Association has offered a very satisfactory solution of the difficulty by importing to this region each year a group of eminently representative leaders in the fields of medicine and surgery. The 1927 meeting, which was held in Boise on June 27-29, fully upheld the reputation of the association for providing programs of high merit.

Although the meeting was located at a considerable distance from the homes of the majority of Northwest practitioners, there was a very sizable attendance, approximately two hundred fifty visitors being registered. The local physicians of southern Idaho had thoroughly organized for the purpose of entertaining their guests and in consequence more than ordinary courtesies were extended. Many took advantage of the opportunity to visit the famous Arrowrock dam and other places of scenic interest in the vicinity of Boise. A ball was held at the Elks Temple in honor of the visiting doctors and their wives. The latter were also extensively entertained by the wives of Boise physicians at luncheons, teas and motor drives during the time of the meetings.

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[4] Garde, F. W. and Maytum, C. K.: The Treatment of Hay Fever with Ephedrine. Preliminary Report. A. J. M. Sc. 172:588 (Oct.) 1926.

The scientific sessions were held in the auditorium of the Boise High School. A commercial exhibit was also located in this building. Those who may have feared that Boise might prove to be an uncomfortable location for a midsummer meeting were agreeably surprised, for the weather was at all times delightfully cool. At the opening session, which was called to order by President James L. Stewart of Boise, short addresses of welcome were made by the Governor of Idaho and the Mayor of Boise. The mornings and evenings were devoted to joint sessions, while in the afternoons there were separate meetings of the medical and surgical sections.

Dr. Aldred S. Warthin of Ann Arbor, Mich., professor of pathology at the University of Michigan Medical School, proved to be an extemporaneous speaker of rare ability. His lecture on "The Nature of Pernicious Anemia" was timely. He reviewed the history of the etiology of this baffling disease, as well as the successive steps in medical knowledge which culminated recently in what promises to become a curative agent of great value, the liver diet treatment of Minot and Murphy. Dr. Warthin believes that pernicious anemia is the reaction of an abnormal constitution to some harmful external agent. This view would explain, he stated, why only a small proportion of patients having sprue, Bothriocephalus latus and other infections develop severe anemia of the pernicious type.

The subject of anatomy was made intensely interesting by Prof. T. Wingate Todd, of Western Reserve University, Cleveland, Ohio. From examination and study of ancient skeletons he has been able to conclude that the span of human life in prehistoric times was much shorter than it is today. He denies that the shape of the human skull is a true indication of the degree of intelligence, but stresses the importance of skull capacity in evaluating intellectual capacity. Dr. Herbert M. Evans, professor of anatomy at the University of California Medical School, San Francisco, Cal., reviewed his experiments by which, for the first time in the history of research on the hypophysis, experimental acromegaly has been produced. He accomplished this by feeding fresh anterior lobe substance to rats.

Dr. E. S. Judd of the Mayo Clinic, Rochester, Minn., read a paper on "Ulcer of the Stomach," in which he stated that he believes it impossible to determine by gross examination whether or not a gastric ulcer is malignant. In another address he cautioned against the indiscriminate removal of the gall bladder as a source of focal infection. Dr. John deJ. Pemberton, also of the Mayo Clinic, presented papers dealing with goiter and with arteriovenous aneurysm. Dr. Dean Lewis, professor of surgery at Johns Hopkins University Medical School, Baltimore, Md., discussed lesions of the arteries of the extremities, and also read a paper on "Our Present Knowledge of Goiter." On the last day of the meeting he conducted a surgical clinic.

Dr. Arthur Bloomfield, professor of medicine at Stanford University Medical School, San Francisco, Cal., in his address on "The Clinical Physiology of the Stomach," asserted his belief that the commonly used test meals for determination of gastric acidity give false results. He uses instead a liquid meal containing fifty cubic centimeters of 7 per cent. alcohol. Ten cubic centimeters of gastric contents are then withdrawn for examination at fifteen-minute intervals until the stomach is empty.

For those interested in obstetrics the papers read by Dr. R. D. Mussey of the Mayo Clinic, were of great value. He stated that the majority of patients admitted to the Mayo Clinic with symptoms of toxemia of pregnancy were either ignorant of the necessity of prenatal care, or had disregarded their physician's advice to come in for periodic antepartum examinations.

Dr. Stuart Pritchard of the Battle Creek Sanitarium, Battle Creek, Mich., a national authority on diseases of the chest, presented papers dealing with his special field. Dr. Harold L. Amoss, associate professor of medicine at Johns Hopkins University Medical School, explained with great simplicity and clearness the present-day knowledge of the nature of poliomyelitis, erysipelas, and sporotrichosis. With regard to the etiology of poliomyelitis, he stated that the consensus of opinion is now against the globoid body as the causative agent. Furthermore, he is not convinced that it is a streptococcus infection.

Orthopedic surgeons among others found the addresses of Dr. W. R. MacAusland, of Boston, Mass., enlightening. He emphasized the importance of preventing the scoliosis which may follow infantile paralysis, since corrective measures applied after it has once begun are usually ineffective.

Dr. Frank Hinman, professor of urology at the University of California Medical School, San Francisco, Cal., gave a series of excellent lectures, designed to orient the general practitioner in relation to the field of urology.

At the conclusion of the meeting the annual banquet was held at the Owyhee Hotel. The result of the election of officers of the association for the ensuing year was announced as follows: President, Dr. E. F. Root, Salt Lake City, Utah; president-elect, Dr. W. B. Holden, Portland, Ore.; first vice-president, Dr. G. W. Gue, Caldwell, Idaho; second vice-president, Dr. Robt. E. McKechnie, Vancouver, B. C.; secretary-treasurer, Dr. Frederick Epplen, Spokane, Wash. The place of the 1928 meeting is to be determined at a later date.

WASHINGTON STATE MEETING

The Washington State Medical Association will hold its thirty-eighth annual meeting at Tacoma August 29-31. This city, being situated on Puget Sound, should prove an ideal location for a summer convention. Tacoma has a population of 125,000, and contains adequate hotel and other facilities for the entertainment of its guests. Furthermore, on account of its proximity to Rainier National Park, the Pacific Ocean and Puget Sound, it affords ample opportunity for combining a delightful vacation with the medical meeting. The physicians of Tacoma, under the leadership of Dr. Harry G. Willard, president of the state association, have spared no pains in providing a program of high merit as well as interesting entertainment.

Headquarters will be at the Winthrop Hotel, and it is requested that those arriving by train or automobile go first to headquarters so that they may be provided with transportation to the country club and elsewhere.

PROGRAM

Monday, Aug. 29

8:00 a. m. Washington State Medical Association Golf Tournament at Tacoma Country Club.

3:00 to 5:00 p. m. (For members who do not play golf):

Diagnostic Surgical Clinic, Tacoma General Hospital, Dr. Dean Lewis, Johns Hopkins University.

Demonstration: Technic of Dick Test. Dr. Gladys Dick, Chicago.

Diagnostic Pediatric Clinic, Dr. Wm. P. Lucas, San Francisco.
Tacoma General Hospital.

7:30 p. m. Dinner Dance at the Country Club.

Tuesday, Aug. 30

7:00 to 9:00 a. m. Operative Clinics at St. Joseph and Tacoma General Hospitals.

9:00 to 10:00 a. m. Business Meeting.

9:30 a. m. "Blood Injections," Dr. C. Ulysses Moore, Portland.

"Asthma in Children," Dr. William P. Lucas, University of California Medical School, San Francisco.

Tacoma with Mountain in Background

"Dehydration Fever," Dr. Lyle A. Greenwood, Bellingham.

Discussion by Dr. P. D. McCornack, Spokane.

"Present Status of Scarlet Fever Control," Dr. George Dick, Rush Medical College.

12:00 m. Luncheon at Winthrop Hotel.

Sectional Luncheons: Public Health League, etc.

2:00 p. m. Surgical Paper, subject not announced, Dr. Dean Lewis, Johns Hopkins University.

"Treatment of Occiput Posterior Positions," Dr. Robert N. Hamblen, Spokane. Discussion by Dr. J. Warren Bell, Everett.

"Back Injuries, with Some Observations on End Results," Dr. S. S. Goodnow, Aberdeen.

"Treatment of Back Injuries," Dr. Mitchell Langworthy, Spokane.

Discussion by Dr. H. T. Buckner, Seattle.

Tuesday, Aug. 30

North Pacific Pediatric Society Section

12:00 m. Luncheon at Winthrop Hotel.

2:00 p. m. President's Address, Dr. H. L. Moon, Seattle.

"Traumatic Lesions of Diaphragm in Infancy and Childhood; Report of Cases." Dr. Harry C. Olmsted, Seattle.

"Care of the Normal Infant," Dr. William P. Lucas, University of California Medical School, San Francisco.

"Results in Congenital Goiter," Dr. H. H. Skinner, Yakima.

Tacoma General Hospital

"Hypertrophic Pyloric Stenosis Occurring in Premature Twins," Dr. J. B. Bilderback, Portland.

Reading of Dick Test Demonstration: Dr. Gladys Dick, Chicago.

Business Meeting of North Pacific Pediatric Society.

7:00 p. m. Annual Banquet, Winthrop Hotel.

Wednesday, August 31

7:00 to
9:00 a. m. Operative Clinics at local hospitals.

9:00 to
10:00 a. m. Business Meeting.

10:00 a. m. "Treatment of Hemorrhoids," Dr. Arthur Crookall, Seattle.

Discussion by Dr. C. R. Zener, White Salmon, Wash.

"Thoracic Tumors," Dr. Charles R. Castlen, Seattle.

Discussion by Dr. J. P. Richardson, Ellensburg.

"The Larynx in Thyroid Disease," Dr. Albert B. Murphy, Everett.

Discussion by Dr. A. E. Codd, Spokane.

12:00 to
2:00 p. m. Luncheon at Winthrop Hotel. Meeting of Secretaries of Component County Societies.

2:00 p. m. Surgical Paper, Dr. Dean Lewis, Johns Hopkins Hospital.

"Local Anesthesia in Major Surgery," Dr. E. N. Layton, Colfax.

Discussion by Dr. Robert D. Forbes, Seattle.

"Intermittent Duodenal Stenosis," Dr. Richard Hays, Longview.

Discussion by C. J. Johannesson, Walla Walla.

Scientific Exhibit at Winthrop Hotel.

(1) Tuberculosis.

(2) Fractures. Pacific Northwest Orthopedic Society.

(3) X-ray. Seattle Radiological Society.

(4) Carcinoma.

Fircrest Golf Club, Tacoma

IDAHO STATE MEETING

The Idaho State Medical Association will hold its annual meeting at Twin Falls, August 29-31. The convention, since it is to be located in the southern portion of the state, should be easily accessible to a large number of Idaho physicians. Twin Falls, an attractive city with a population of 8,324, will provide adequate facilities both for the meeting and for entertainment. The surrounding country contains a number of places of interest to the tourist, notably Shoshone Falls.

Business District, Twin Falls.

PROGRAM

Monday, Aug. 29

9:00 a. m. Call to order.

Address of Welcome.

Business and social announcements.

Second meeting of the House of Delegates.

2:00 p. m. Dr. J. Tate Mason, Seattle, Wash. Subject to be announced later.

Dr. Joseph R. Numbers, Boise, Idaho. "The Importance of Rectal Examinations."

Dr. I. H. Moore, Seattle, Wash. Subject to be announced later.

Tuesday, Aug. 30

7:00 to 9:00 a. m. Hospital visits and clinics; country trips.

9:00 a. m. Dr. C. F. Kemper, Denver, Colo. "Treatment of Diabetes and Its Complications."

Dr. Parley Nelson, Idaho Falls, Ida. "History Taking."

12:00 m. to 2:00 p. m. Luncheon Conferences of Component Society Secretaries.

2:00 p. m. Dr. Joseph Aspray, Spokane, Wash. "Electrocoagulation of Accessible Malignant and Nonmalignant New Growth."

Dr. William C. Finnoff, Denver, Colo. Subject to be announced later.

Dr. C. W. Pond, Pocatello, Ida. "Tonsils."

Dr. C. F. Kemper, Denver, Colo. "Diagnosis of Goiters."

Dr. J. Tate Mason, Seattle, Wash. Subject to be announced later.

Dr. Clifford G. Grulee, Chicago, Ill. "Clinical Course and Treatment of Lobar Pneumonia in Young Children." (Lantern slides for demonstration.)

7:30 p. m Official Banquet at Rogerson Hotel.

President's Address.

Dr. Joseph A. Pettit, Portland, Ore. "Periodic Health Examinations and Public Health League."

Wednesday, Aug. 31

7:00 to 9:00 a. m. Tours of hospitals and country trips.

9:00 a .m. Dr. George Downs, Spokane, Wash. "Gasserian Ganglion Surgery."

Dr. C. R. Scott, Twin Falls, Ida. "Medical History."

Dr. F. M. Sprague, Pocatello, Ida. Subject to be announced later.

Dr. Clifford G. Grulee, Chicago, Ill. "X-ray Manifestations of Bone Change in Children."

2:00 p. m. Dr. Paul B. Magnuson, Chicago, Ill., Assistant Professor of Surgery, Northwestern Medical School. Subject to be announced later.

County Hospital, Twins Falls.

Headquarters, Rogerson Hotel.

Meetings, Masonic Temple.

MEDICAL NOTES

The Medical Association of Montana will hold its forty-ninth annual meeting at Missoula, July 13-14. Among the speakers at the scientific section will be Dr. Jabez N. Jackson, Kansas City, Mo., president of the American Medical Association, and Dr. James Tate Mason, Seattle, Wash. Dr. Elmer G. Balsam, Billings, is secretary of the association.

Urological Clinics Scheduled. The Western Branch of the American Urological Association will hold a clinic July 5 at St. Vincent's Hospital, Portland, July 6 at Providence Hospital, Seattle, and July 7 at Vancouver General Hospital, Vancouver, B. C. A scientific section will be held in the Medical and Dental Building auditorium, Seattle, July 6 at 1 p. m. On the same day there will be a luncheon for members at the College Club, and dinner for members and their wives at the Rainier Club.

OREGON

Conduct Indian Health Survey. During the month of June, Dr. G. E. Bellinger and a corps of other specialists examined the Indians on the Klamath Indian reservation. This was part of a nation-wide survey which is being made to determine the health status of the American Indian.

Doctors Plan Hospital. Drs. J. A. Reuter, F. F. Thompson and Thompson Coberth, together with several local business men have organized a stock company for the purpose of erecting a community hospital at The Dalles. The structure, which will cost $150,000, will be located on the site now occupied by The Dalles hospital.

Plan Sanitarium for Drug Addicts. Governor Patterson has appointed a committee to study the drug addict situation in Oregon, with a view to establishing, if possible, a state sanitarium for treatment of these unfortunate patients.

Tuberculosis Association to Meet in Portland. At the recent annual convention of the National Tuberculosis Association, which was held in Indianapolis, Ind., Portland was chosen as the place of the 1928 meeting. Dr. Ray Matson of Portland and Dr. G. A. Bellinger of Salem were elected directors of the national association.

Klamath and Lake County Medical Society, at a meeting at Klamath Falls June 10, held a symposium on the medical, surgical and x-ray aspects of the treatment of goiter.

Dr. Walter B. Swackhamer, medical officer in charge of the United States Veterans' Hospital, Portland, has been transferred to the Palo Alto, Calif., hospital of the Veterans' Bureau.

Heads Hospital Staff. Dr. W. H. Dale has been elected chief of staff of the Pacific Christian Hospital at Eugene.

Dr. Malcolm Irvine, who has been located at Myrtle Creek for the past three years, has moved to Independence, where he will continue the practice of medicine.

Medical Weddings. Dr. Herman H. Stockwell, of Salem, and Miss Alta G. Terpening, Seattle, Wash., were married at Salem May 31. Dr. Arthur Van Dusen of Astoria and Miss Darie Burton of Bend were married in Irvington on June 22.

WASHINGTON

Mayor Urges County-City Hospital. Mayor Bertha K. Landes of Seattle, in her 1927 annual report to the city council has emphasized the need of facing the inadequate hospital situation in Seattle and King County which, she has stated, is "bad both from the humanitarian and economic side." She is of the opinion that the development of a new and largely increased health program will prove to be a real economy to the tax payers. She recommends that the entire hospital program be separated from political manipulation, and the hospital fund be controlled and disbursed by a hospital board composed of representative citizens.

State Tuberculosis Association Meets. The annual meeting of the Washington Tuberculosis Association was held at Ellensburg, June 16. Among the speakers were Dr. Alexius M. Forster, Colorado Springs, Colo., and Mr. Arthur J. Strawson, New York City, supervisor of Field Service of the National Tuberculosis Association.

Oto-Ophthalmological Meeting Held. The fifteenth annual meeting of Pacific Coast Oto-Ophthalmological Society was held at Spokane June 6-7. At the same time examinations were conducted by the American Board of Ophthalmology and the American Board of Otolaryngology.

Officers of the Society were elected as follows: President, Dr. William J. Mellinger, Santa Barbara, Calif.; first vice-president, Dr. Robert R. Hampton, Salt Lake City, Utah; second vice-president, Dr. A. T. Wanamaker, Seattle, Wash.; Dr. Walter F. Hoffman, Seattle, reelected secretary.

The next meeting of the American Board of Otolaryngology will be held at Detroit, September 12, 1927. Applications for examination should be sent to Dr. H. W. Loeb, Secretary, 1402 South Grand Boulevard, St. Louis, Mo.

Dr. A. L. Brandt, who was formerly at the Snoqualmie Falls Hospital, has opened an office at Enumclaw.

Dr. F. W. McKnight of Cle Elum has resumed practice, following a period of several months spent in California on account of poor health.

Medical Weddings. Dr. Cyril V. Lundvick, Tacoma, and Miss Kathleen Parshall, Seattle, were married June 11 at Seattle. Dr. Chester A. Regan and Miss Helen B. Winklesky of Seattle were married June 15. Dr. A. W. Cotts of Tacoma and Miss Mary Lucas of Oregon City, Ore., were married at the home of the bride's parents on June 16.

IDAHO

Idaho Falls Medical Society at a meeting June 3, elected the following officers for the ensuing year: President, H. R. Hatch; vice-president, Dr. Parley C. Nelson; secretary-treasurer, Dr. J. W. West; delegates to state association meeting, Drs. T. C. Hollister, E. I. Egbert and Harry L. Willson. Alternates, Drs. R. J. Sutton and H. Ray Hatch.

Kootenai County Medical Society has elected the following officers for the year 1927: President, Dr. Alexander Barclay; vice-president, Dr. Harold J. Sturges; secretary-treasurer, Dr. John T. Wood; delegate, Dr. Alexander Barclay, all of Coeur d'Alene. Dr. Robert Gerlough, Spirit Lake, and Dr. Harold T. Anderson, Coeur d'Alene, have been elected to membership in the society.

Dr. O. H. Mabey of Malad City left recently for San Francisco, where he will take a postgraduate course at the University of California Medical School.

Medical Wedding. Dr. Henry Goodfield and Miss Rosa Mark of Boise, were married June 5.

OBITUARIES

Dr. William H. Axtell, Bellingham, Wash., died at his home May 16, following an illness of three weeks duration. He was born in 1863 and graduated from the Medical College of Ohio, Cincinnati, in 1891. He practiced for several years at Tipton, Ind., moving to Bellingham in 1894. He was very active in the medical profession as well as in the civic life of Bellingham. During the world war he was assigned to the Medical Corps at Camp Lewis and was later stationed at Camp Funston on the staff of General Leonard Wood.

Dr. Nicholas N. Wiger, Seattle, Wash., died at his home June 6, following a brief illness, aged 47 years. He was born at River Falls, Wis., in 1879 and graduated from the University of Minnesota Medical School in 1903. He then moved to Seattle, where he practiced continuously until the time of his death.

Dr. Albert T. Kaupp, of Wenatchee, Wash., died at a local hospital May 28, following a prolonged illness. He was born at Hughesville, Pa., in 1864 and graduated from Jefferson Medical College of Philadelphia in 1891. He practiced for several years at Diller, Neb., moving to Wenatchee in 1902. He was one of the pioneer physicians of North Central Washington.

Dr. James P. Atwood, Baker City, Ore., died at the home of his son June 15, aged 81 years. He was born in Green County, Wis., in 1846. He attended the Willamette University Medical School, and graduated from Columbia University College of Physicians and Surgeons, New York, in 1884. He began practice at Baker City immediately after his graduation and remained there until his death. He was one of the pioneer physicians of Eastern Oregon.

REPORTS OF SOCIETY MEETINGS

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., A. T. Wanamaker; Secty., W. W. Bell

At the general meeting of the King County Medical Society, held June 6, in the auditorium of the Medical-Dental Building, Dr. Brien T. King acted as chairman in the absence of the president. Dr. Dorrell G. Dickerson presented a paper, the title of which was "Some Observations on the Cerebrospinal Fluid in Disseminated Sclerosis."

Dr. G. I. Birchfield discussed "The Therapeutic Value of Some of the Newer Drugs." He presented the history of two cases of general infection in which recovery followed the intravenous injection of one per cent mercurochrome solution. Five c.c. was the maximum dose used as the essayist believes that larger doses are dangerous. He found hexylresorcinal of value in a case of pyelonephritis. It was necessary to administer 5000 capsules to effect a cure. The effect of ephedrine hydrochloride was observed in six patients having asthma. With one exception all were benefited. The drug was given in doses of one-half to one grain by mouth, the beneficial effects lasting from four to twenty-four hours. Neutral acriflavine given in one per cent solution intravenously was found of value in treatment of infections of the genitourinary tract. Early cases of encephalitis also seem to respond to this drug but old cases are unaffected.

A meeting of the medical section was held June 13, with Dr. Homer Wheelon in the chair. Several interesting cases were presented by Drs. C. E. Watts and Henry Takacs. Dr. D. H. Nickson exhibited pathologic specimens. Dr. N. F. Dwyer, Seattle, presented a paper on "Differential Diagnosis of Organic Lesions of the Gastrointestinal Tract."

He outlined the salient clinical and roentgenologic factors in the differential diagnosis of gastrointestinal lesions. Two thousand nine hundred patients, or 12 per cent of the total number of people consulting the Virginia Mason Clinic, required a gastrointestinal examination. One hundred and sixty-nine, or 5.8 per cent of the number having a gastrointestinal examination had cancer. The sites of carcinoma were as follows: Esophagus 17 (10 per cent-, stomach 87 (51.5 per cent), large bowel 65 (38.5 per cent).

Lesions causing dysphagia or obstruction of the esophagus to be differentiated are: Carcinoma, benign stricture (organic or spasmodic), diverticulum, cardiospasm, external pressure stenosis.

Carcinoma is most frequent. The ratio of males to females is five to one. Carcinoma is distinguished roentgenologically by irregular filling defect while benign and spasmodic strictures are smooth. Carcinomata of the esophagus are generally found in the lower third of the esophagus in male and in the upper third in females. If a man over forty, without history of trauma, complains of dysphagia for less than one year cancer will be found in 90 per cent of the cases.

Pressure diverticula are rare and always occur at the junction of esophagus and pharynx because here there is an area of deficient musculature.

The second paper of the evening on the Minot and Murphy diet treatment of pernicious anemia, was by Dr. Harry H. Kretzler of Edmonds.

The factors of the diet are: (1) Liver, 200 grams or more. May substitute occasionally chicken liver or gizzard, or lamb kidney or sweetbread. (2) Fresh fruit, 400 grams. (3) Red muscle meat, 125 grams, free of fat and freshly cooked. (4) Vegetables, 300 grams leafy vegetables. (5) Fats, not over 70 grams daily. Avoid cream and butter. (6) Avoid grossly sweet foods. Use sugar sparingly. (7) Starchy foods to suit individual taste but only after other items have been taken. Best crusted or dextrinated. (8) Limit milk to 240 grams. (9) Avoid excess of salt. Tea and coffee as desired. One egg daily. Avoid pork. Eat liver and meat rare. Avoid fried foods.

No medication other than dilute hydrochloric acid (15 c.c. daily) was utilized.

Four cases were treated by Dr. Kretzler, which had been markedly improved by the above method of treatment. In most of these cases nothing was given except the diet and dilute hydrochloric acid. From the limited experience in these cases, he felt that the only essential is liver and that similar results obtain whether the liver is eaten raw or cooked.

PIERCE COUNTY MEDICAL SOCIETY

Pres., W. B. Wheeler; Secty., W. B. Penny

The regular meeting of the Pierce County Medical Society was held in its rooms May 24, 1927. Dr. E. F. Dodds presided. Dr. Joseph F. Griggs presented a paper on "Cardiovascular Renal Disease." Drs. Buis, Turner, Cameron, R. Leverton and Quevli took part in the discussion which followed.

The society passed resolutions in memory of the recent deaths of two of its members, Dr. Thomas F. Smith and Dr. William L. Ludlow.

TRI-COUNTY MEDICAL SOCIETY

The Skagit County Medical Society entertained the Snohomish County and Whatcom County societies at the annual convention of the Tri-County Medical Association, which was held at Mount Vernon, June 9. In the evening there was a banquet at the President Hotel. Dr. S. W. Holton, Sedro-Woolley, president of the Skagit County Medical Society, acted as toastmaster. The following scientific papers were read: "The Larynx in Thyroid Surgery," by Dr. Albert B. Murphy, Everett; "Osteochondritis Deformans Juvenilis," by Dr. J. G. Greer, East Stanwood. The activities of the Washington Public Health League were discussed by Dr. H. A. Dowling, Seattle, chairman, and Mr. Robert O. Jones, Seattle, executive secretary. The Tri-County Association will hold its next annual meeting at Bellingham.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

DISEASES OF THE DIGESTIVE ORGANS. With Special Reference to Their Diagnosis and Treatment. By Charles D. Aaron, Sc. D., M. D., F. A. C. P., Professor of Gastroenterology and Dietetics in the Detroit College of Medicine, etc. Fourth Edition, Illustrated. Cloth, $11.00. 926 pp. Lea and Febiger, Philadelphia, 1927.

Professor Aaron's work is a standard authority on diseases of the digestion and in its fourth edition. But apropos of this and similar treatises it has always seemed to the reviewer that the attitude of gastroenterologists differs, unfortunately, from that of internists in that the former lay meticulous stress and emphasis on laboratory tests and technical methods out of all proportion to their practical value in diagnosis.

Thus, in the present volume in the diagnosis of liver diseases, the use of the van den Bergh and Rosenthal tests and examination of the duodenal contents by Lyon's method are undoubtedly of some value but are just as likely to be misleading if one puts too much stress on them. The reviewer has shown that they may be wholly at variance with pathologic lesions as proved by autopsy, especially in the case of atrophic cirrhosis and cancer of the liver.

But even more unfortunate is that too great concentration on laboratory tests leads one to overlook the broad clinical features of disease in making a diagnosis. And the subject of differential diagnosis is slighted in a high degree in the description of many diseases in this book. For instance, only a few words are devoted to differentiating cholecystitis from duodenal ulcer. The author contents himself with remarking in this connection that "the combination of burning, fullness, and pronounced hunger pain relieved by alkalies or food, is almost conclusive evidence of duodenal ulcer," and lets it go at that. Such a statement seems wholly inadequate to one accustomed to differentiating ulcer from cholecystitis. There are numberless cases where the symptoms are identical in these diseases, and even a large intestinal hemorrhage may occur in cholecystitis in the absence of duodenal ulcer. Cholecystography has done much to separate these disorders but even this may be delusive, as in a recent case, where in the absence of any shadow of the gall bladder after the use of the dye there was found a large duodenal ulcer and normal gall bladder. In fact, the discrimination of chronic cholecystitis and duodenal ulcer is one of the most difficult daily diagnostic problems and only by taking into account every clinical feature can a correct diagnosis be made. The average radiologist has hitherto been grievously at fault in the diagnosis of these diseases until cholecystography came to his aid.

A curious omission in a work on diseases of the digestive organs is the omission of the most common of all chronic digestive diseases, i. e., chronic cholecystitis—more common, as recently pointed out by Dwyer, than all the other common chronic digestive disorders put together, viz., gastric cancer, ulcer and

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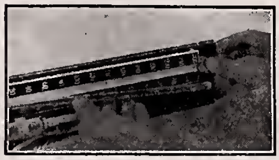

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chronic appendicitis. There is no mention of chronic cholecystitis in the index and no separate consideration is given to it in the text but much space is allotted to gall stones. It would seem to be much wiser to devote all the space possible to cholecystitis and to note cholelithiasis as a complication.

The author considers together catarrhal jaundice, cholangitis and acute cholecystitis which is confusing as clinically they have quite different values. So under syphilis of the liver the very distinct luetic liver lesions, as acute hepatitis, chronic interstitial hepatitis, gumma and perihepatitis, are not described individually but the attempt is made to give the symptoms collectively. This is impossible for the symptoms are as far apart as tumor of the liver in gumma, to what simulates acute cholecystitis with local tenderness, chills, fever, leucocytosis and jaundice in syphilitic perihepatitis.

There is, of course, a distinct field for works on diseases of the digestive organs but it should be much more circumscribed and conform to the best works on internal medicine. When a gastroenterologist enters the field of an Osler it is neither to his advantage nor to that of his readers.

WINSLOW.

A TEXT-BOOK OF MEDICINE. By One Hundred Thirty American Authors. Edited by Russell L. Cecil, M. D., Assistant Professor of Clinical Medicine, Cornell University Medical School, New York. Octavo of 1500 pages. Illustrated. Cloth, $9.00. W. B. Saunders Company, Philadelphia and London, 1927.

This is a rather new type of text-book in that it is written by one hundred thirty American authors who are teachers of medicine or investigators of the special disease of which they write. Yet the monographs are not long and exhaustive, as in most so-called systems of medicine, but are admirably digested, summarized and reduced to the essentials of the subject considered.

Thus, under pernicious anemia we find that "A diagnosis based upon the examination of the blood alone is unjustifiable although study of the blood usually contributes considerable information about the condition. In many cases it gives no clue at all to the diagnosis, especially in early stages of the disease." Particular emphasis is placed, as it should be, upon the presence of spinal cord, degenerative symptoms, glossitis and, above all, absence of free hydrochloric acid in the gastric contents. Even the presence of a little free HCl in fractional gastric analysis is sufficient to eliminate the diagnosis of pernicious anemia, according to the clinical findings of Minot and Murphy.

While this summarizing of the essentials of the subjects contributes to the excellence of the work yet it is carried too far in some instances, e. g., in reference to chronic cholecystitis. Less than a page is devoted to this most important and common of all chronic organic digestive disorders, which is as common, indeed, as pointed out recently by Dwyer, as the combined incidence of gastric and duodenal ulcer, gastric cancer and chronic appendicitis. Also it is merely noted that "cholecystography is of undoubted value in diagnosis of gall bladder disease." It would seem that a brief statement such as that "an absence of gall bladder shadow (if the dye has been properly absorbed) practically always means gall bladder disease, whereas the presence of gall bladder shadows by this method has little significance and one must then rely upon clinical evidence in diagnosis," would have made the reference to cholecystography worth while.

This is an age in which few medical men can readily compass the entire domain of medicine and many devote themselves to the diseases of practically one organ. It required an Osler to describe in a clear and concise manner the whole field of medicine, which possibly even he could not do today. He had, however, a rare faculty of portraying lucidly and concisely the gist of a subject, even including the rarer manifestations of disease.

This work seems to the reviewer to be the most successful symposium in the form of a text-book of medicine so far produced, considering the great number of able and distinguished authors and its condensation into a single volume. The value of its conciseness far overbalances its defects in occasional omissions, and the clinical descriptions and sections on diagnosis are especially good. Treatment as a whole is brief, which is usually a sign of soundness in medical thought. Thus, under subacute endocarditis, "No form of treatment is successful. Mercurochrome, acroflavine and gentian violet have been used without avail. It seems certain that no attempt should be made to immunize the patient by vaccines, serums, or non-specific shock, since such methods seem to shorten life." And that is all.

The treatment is, however, not at all neglected and is very much to the point and absolutely based on scientific facts.

Altogether this is a most admirable treatise, especially for medical students.

WINSLOW.

FUNDAMENTALS OF THE ART OF SURGERY. By John H. Watson, M. B. B. S. (Lond.), F. R. C. S. (Eng.), Surgeon to the Victoria Hospital, Burnley, etc. First Edition. 340 pp. Cloth, $6. Paul B. Hoeber, Inc., New York.

This work by a British surgeon was primarily intended to give some valuable directions in certain phases of surgical treatment to house surgeons and junior colleagues. It has, however, quite obviously outgrown its original field and is worthy of perusal by the most experienced surgeon. It is in effect a general discussion of the various phases of surgery which have to do with the management of the surgical patient. It contains a wealth of helpful details and a multitude of important clinical observations.

FORBES.

NORTHWEST MEDICINE

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ORIGINAL CONTRIBUTIONS

CHOLECYSTITIS *

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In choosing cholecystitis as one of the topics to discuss at this meeting I had in mind trying to define some of the problems that are being encountered in the diagnosis and treatment of this condition. In the first place, it is difficult to define cholecystitis as we have come to regard it, and it seems appropriate, therefore, to review some of the fundamental principles.

The term cholecystitis infers the presence of inflammation and it is present in a certain proportion of the cases, but bacteriologic and histologic studies show that the syndrome usualy attributed to cholecystitis will often be observed when bacteria can not be demonstrated and when there is no inflammatory reaction in the tissues of the gallbladder. On more than one occasion in the Clinic bacteriologic studies have been carried out on a series of gallbladders removed at operation, and, while the results have varied considerably, in none of the groups was it possible to obtain cultural growth of any organism in as many as 50 per cent of the cases. In each instance the gallbladders were carefully protected from contamination and were cultured within a few minutes after removal. Several different mediums were employed and the cultures were made from the tissues of the wall of the organ, from the bile, and from the stones when any were present. In all of the cases the gallbladder was removed because of disease, and in most cases there was gross evidence of change in the tissues of the wall. In some there was thickening of the wall or edema and congestion, and at first it was rather surprising that all of the gallbladders did not afford cultural growths of bacteria. Positive cultures were obtained from the tissues oftener than from stones or bile, the bile being positive in only about 7 per cent of the cases and the stone in 10 per cent. Failure to obtain a larger portion of positive cultures might possibly be attributed to individual error, yet our experience is about the same as that of others who have made similar investigations. It is, therefore, apparent that in certain cases some cause other than bacterial invasion must be considered responsible for the condition called cholecystitis.

Mann has conducted some interesting experiments in which he showed that tissue changes characteristic of cholecystitis would result in an experimental animal when Dakin's solution was given intravenously. Just why this particular chemical affects the tissues of the gallbladder first and out of all proportion to other tissues so far as I know has not been explained. The gallbladders of the animals given this solution are identical grossly and histologically with many that are removed at opera-

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* Read before the Sixth Annual Meeting of Pacific Northwest Medical Association, Boise, Ida., June 27-29, 1927.

tion for severe cholecystitis. Bacteria are not recovered from the tissues of the gallbladder in which these changes are produced experimentally. Whether it is possible that under certain conditions in the human being there might be certain chemical changes in the blood that would produce similar changes in the gallbladder, remains to be proved (fig. 1).

The so-called strawberry gallbladder, or "cholesterosis" has been widely discussed, but little is known concerning it (fig. 2). The deposit of lipoids in the epithelial cells of the gallbladder is characteristic in this particular viscus, and, so far as I know, it does not occur in any other tissue. It occurs frequently and undoubtedly without clinical signs. In many instances it is discovered at necropsy in cases in which there was no evidence of disease of the gallbladder during life. On the other hand, this type of gallbladder is entcountered many times during operations for supposed disease of the gallbladder, and certain patients are relieved of their symptoms by removal of the gallbladder. The deposit of lipoids in the epithelium is usually the only tissue change in these cases. Occasionally stones are present. As a rule in these cases there is no inflammatory reaction in the wall of the gallbladder and only rarely is one able to isolate bacteria. Undoubtedly this is primarily a metabolic process in which inflammation may occasionally be associated.

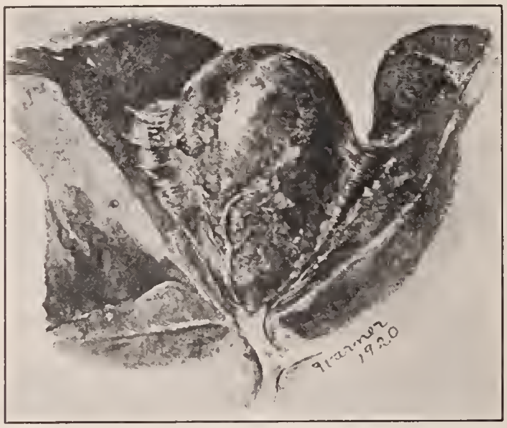

Fig. 1. Experimental cholecystitis in the gallbladder of a dog. Acute inflammatory reaction two hours after injection of chlorinated soda (sodium hypochlorite).

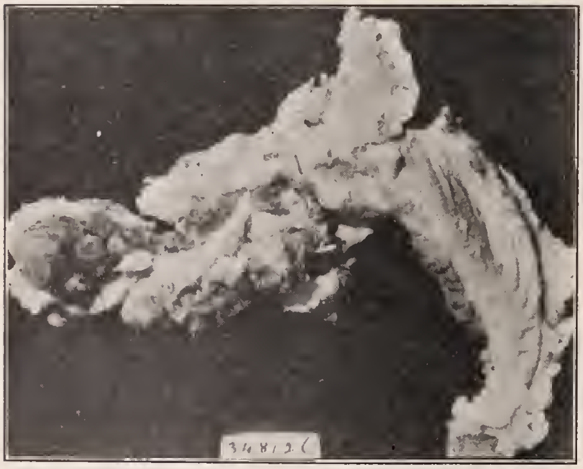

Fig. 2. Subacute cholecystitis.

The introduction of the dye method of studying the gallbladder with the roentgen ray, by Graham and Cole, has still further confused the definition of cholecystitis. This brings up the question of the function of the gallbladder and the diagnosis of its diseases based on the disturbance of one or more of its functions. The functions are believed to be the equalization of pressure within the bile ducts and the concentration of bile up to a certain point while it remains in the gallbladder. Undoubtedly these functions are most often disturbed when the wall of the gallbladder is diseased so the dye method of depicting disease in the gallbladder is certain to become more valuable as we are better able to interpret results. At the present time the method should not be given too much prominence as a practical aid in the diagnosis of disease of the gallbladder; at any rate surgical treatment should not be established on this basis alone.

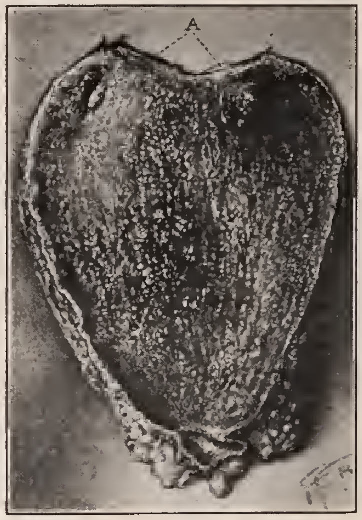

Fig. 3. Chronic catarrhal cholecystitis.

Certain lesions of the gallbladder other than surgical may be responsible for interference with function. If the pathologist will search long enough in a gallbladder removed at operation he will almost certainly find one or more small areas of inflammation as manifested by slight edema and round-cell

Table 1. Three hundred patients with cholecystitis with and without stones: Results five years after operation.

	Results, Per Cent		
	Good	*Poor*	*Causes of Poor Results*
Cholecystitis 1	84.4	13.3	83 per cent did not have definite diagnosis of cholecystitis. 50 per cent had preoperative diagnosis of associated neurosis. 40 per cent probably were due to mistaken diagnosis. All other cases had definite preoperative diagnosis of cholecystitis.
Strawberry gallbladder (chronic, without stones)	87.0	8.7	100 per cent had a postoperative history ot repeated colics without fever. In 75 per cent the colics were accompanied by jaundice and clay-colored stools.
Severe cholecystitis (without stones, grades 2, 3 and 4)	88.0	6.0	100 per cent gave a postoperative history of repeated colics without fever. In 33 per cent the colics were accompanied by jaundice with clay-colored stools.
Strawberry gallbladder (with stones)	96.0	2.0	100 per cent gave a postoperative history of colics without fever, accompanied by clay-colored stools and jaundice.
Severe cholecystitis (with stones, grades 2, 3 and 4)	93.8	2.0	100 per cent gave a postoperative history of colics without fever, accompanied by clay-colored stools and jaundice.

Table 2. Three hundred patients with and without stones: Results five years after operation.*

	Results, Per Cent		
	Good	*Fair*	*Poor*
60 cases severe cholecystitis (with stones, grades 2, 3 and 4)	81.3	12.5	2.0

* One hundred per cent of patients experiencing poor results give a postoperative history of colic without fever but accompanied by clay-colored stools and jaundice.

infiltration. The obvious report in such a case is cholecystitis, and yet it is not likely that this settles the question.

The greatest existing problem in the surgical treatment of the gallbladder is that which deals with chronic disease of the gallbladder (fig. 3). If the condition is clear-cut clinically and a diseased gallbladder with stones is found, the results of surgical treatment are most gratifying. But if the clinical picture is not clear and the observations at operation are not definite and stones are not present, the results of treatment are not so satisfactory.

Besides the problems of infection, chemical changes in the blood, and the metabolic and functional disturbances I have mentioned, there is one other important associated problem, which usually presents itself as follows: The patient gives a clear history of disease of the gallbladder and the surgeon operates expecting to find unmistakable evidence of the trouble, but does not find it. There may be a few palpable lymph nodes in the usual places around the ducts. In view of the fact that the gallbladder is not an unimportant organ like the appendix and should not be removed unless there is a good reason for it, what should be done under these circumstances and how much should one be influenced by the dye test in determiring the procedure to follow?

It seems to me that it is of first importance to decide who is going to say whether the gallbladder is diseased. Shall it be the clinician who studies the case clinically; shall it be the surgeon who makes his decision from observations at operation; shall it be the roentgen-ray expert who says the gallbladder is diseased because it has lost its capacity to function as a tension bulb or to concentrate its contents, or finally, shall it be said that the gallbladder is diseased because the pathologist finds a small area of round-cell infiltration in its walls? Of course a combination of all of these data should finally decide the question. The most important information from a practical standpoint is that which is obtained from careful study of the clinical history, and at the present time we must base our surgical procedures on this phase of the problem. Of course one does not wish to remove a gallbladder if pathologic change is not sufficient to make disease grossly apparent; nevertheless if the clinical features are clear-cut, removal of the gallbladder after the exclusion of other possibilties offers a good prospect of relieving symptoms. If the gallbladder is not removed in these clinically definite cases, the symptoms will continue. If it is removed, the pathologist usually confirms the surgeon's opin-

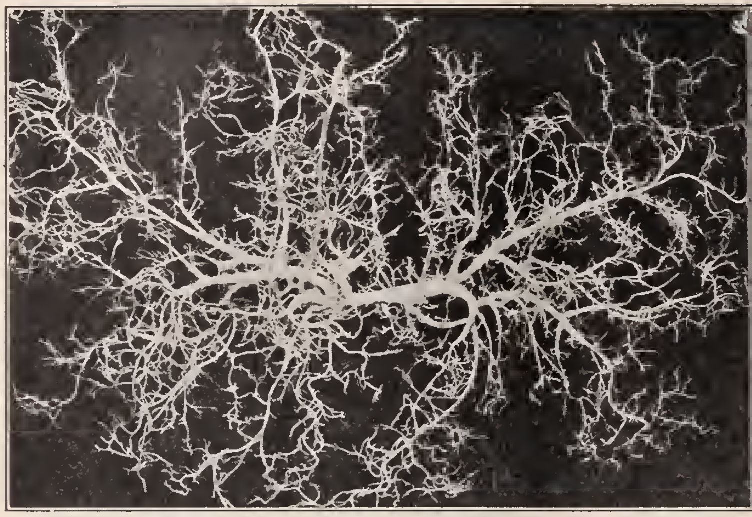

Fig. 4. Normal biliary tree.

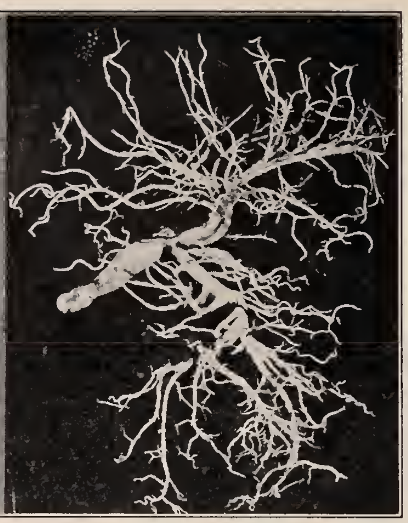

Fig. 5. Biliary tree from functionless gallbladder.

ion because he finds histologic changes that support the diagnosis of cholecystitis. However, I am inclined to believe that in certain of these cases at least, the disease in the gallbladder is only a part, and possibly a minor part, of the trouble; the real trouble causing the symptoms may well be in the liver. Many more cases of what appears to be primary hepatitis are being recognized now than formerly.

Removal of the gallbladder produces several changes in the biliary tract, such as dilatation of the intrahepatic and extrahepatic ducts and often the ablation of the sphincter's activity at the ampulla. If the primary disease is chronic pancreatitis, it may be relieved by removal of the gallbladder either because of getting rid of infected tissue or the sphincter's activity. It is also possible that certain of the ill-defined cases are result of spasm of the sphincter muscle. If such is the case removal of the gallbladder will later relieve the symptoms because the spasm is overcome.

It is because of the fact that the liver, pancreas, sphincter, and possibly other parts of the system may be involved, that the term cholecystic disease has been coined. As our studies in this field progress, it is becoming more apparent not only that cholecystitis does not exist independently but also that some of the diseases we have been attributing to the gallbladder are primarily other processes and that the gallbladder is involved secondarily (figs. 4 and 5).

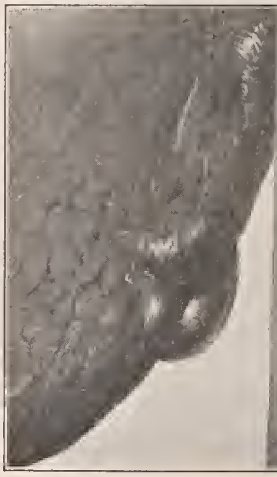

Fig. 6.

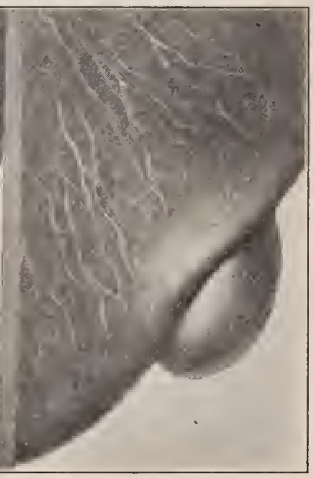

Fig. 7.

Fig. 6. Hepatitis, showing rounded edge of liver.
Fig. 7. Hepatitis, showing rounded edge of liver.

One of the problems in the study of cholecystitis is primary and associated hepatitis (fig. 6). Surgeons who carefully observe the liver when performing operations on the gallbladder soon realize that the liver is seldom normal. Furthermore, chronic inflammation in the liver is found to accompany nearly all abdominal infections, such as appendicitis and gastric and duodenal ulcer. I believe it will soon be possible to recognize certain cases of primary hepatitis clinically. Nearly always the gallbladder is involved but the greatest change in tissue is in the liver itself, the right lobe being affected much more often than the left. In operating for cholecystitis it is not unusual to find the right lobe larger and more firm than normal, and streaked with bands of fibrous tissue showing as white lines on the surface (fig. 7). The edge may be sharp and marked by a white line or it may be rounded. The microscopic picture is that of chronic inflammation. If also the gallbladder shows typical cholecystitis, cholecystectomy offers excellent prospects of complete and permanent relief. If the process seems more definitely confined to the liver and the gallbladder is affected but little if at all, then cholecystectomy offers some prospect of relief but the patient will have pain in the side for months and convalescence will be prolonged. Usually these patients with apparent primary hepatitis are finally greatly improved by removal of the gallbladder.

It is difficult to determine associated inflammation in the pancreas or the existence of primary chronic pancreatitis. Examination during operation on the gallbladder soon shows that the pancreas varies greatly in size, consistency and regularity. If it is larger and harder than normal, convalescence after cholecystectomy will be retarded but I doubt whether the condition of the pancreas alone should be regarded as an indication for the removal of a gallbladder that otherwise seems normal.

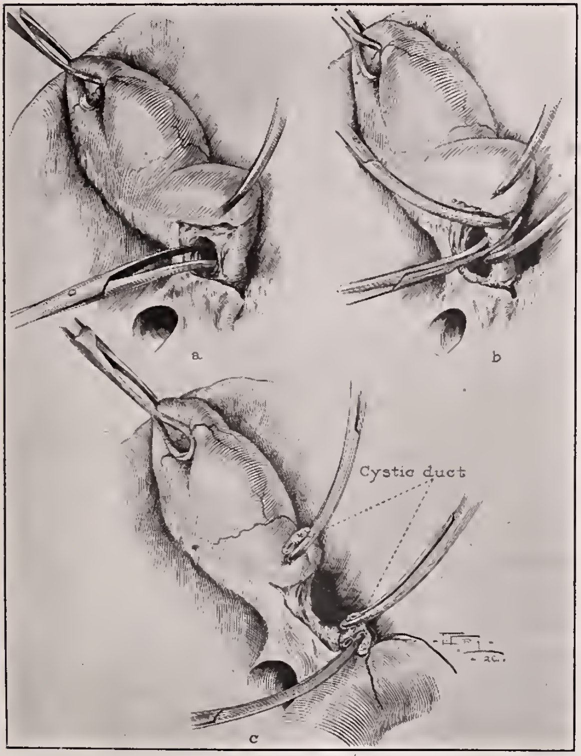

Fig. 8. Technic of operation.

The occurrence of spasm of the sphincter although theoretic may be responsible for some of the symptoms. The relief obtained by secondary drainage of the common bile duct in cases of continuance or recurrence of symptoms following cholecystectomy suggests that contraction of the sphincter may be the cause of the difficulty (figs. 8 and 9).

SUMMARY

Surgeons are called on to operate for lesions of the biliary tract more often than for any other abdominal lesion. The number of operations on the gallbladder has been greatly increased since the general employment of the Graham-Cole dye method in making the diagnosis.

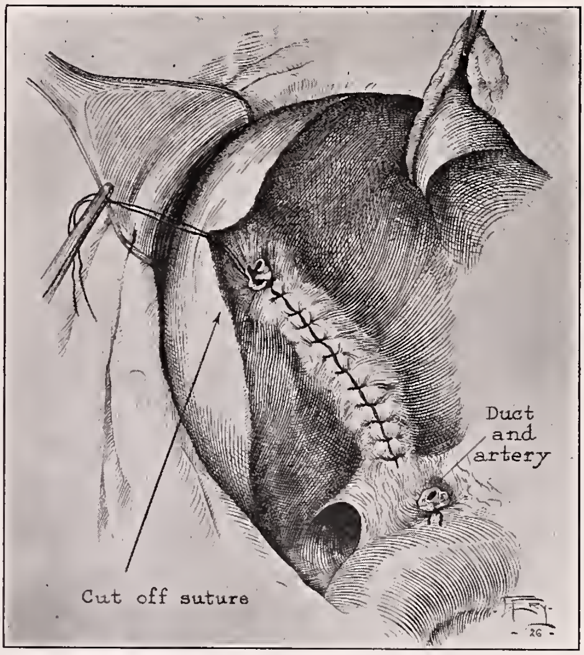

Fig. 9. Technic of operation.

One of the important problems that confronts us today is the determination of just what is meant by the term cholecystitis and cholecystic disease.

THE CLINICAL VALUE OF BLOOD SEDIMENTATION *

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AND
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During the past few years many articles on red blood cell sedimentation have appeared in the literature. Although this phenomenon was first noticed by Galen, it was not until recent years that it was applied to scientific medicine. Fahraens and Westergren were the first to work out a method of measuring the rate of sedimentation and to employ it as a clinical test. Shortly afterward, Linzenmeir[1] simplified the technic, thus making it easily

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* From the Gynecologic Service of the Multnomah County Hospital and the Department of Obstetrics and Gynecology, University of Oregon Medical School.

Table 1. Showing the average sedimentation time, white blood count, polymorphoneuclear leucocyte percentage and temperature in the various pathologic conditions encountered in this series.

Sedimentation Time More Than 60 Minutes						Sedimentation Time Less Than 60 Minutes					
CONDITION	No. of cases	Sed. Time	W. B. C.	% polys	Temp.	CONDITION	No. of cases	Sed. Time	W. B. C.	% polys	Temp.
Chronic cholelithiasis	1	190	5,600	....	98.6	Non-infected incomp. abortion	6	59	9,300	73	98.6
Colloid cyst of thyroid	1	180	3,900	....	98.6	Bartholine abscess	5	57	11,900	64	99
Hernia	3	159	5,800	....	98.6	Adeno-carcinoma of fundus	1	45	7,500	79	98.6
Acute catarrhal jaundice	2	133	5,900	....	98.6	Septic abortion	18	37	12,500	72	100.2
Chr.interstitial nephritis	1	130	9,700	78	98.6	Sub-acute pelvic inflam.	11	32	10,600	63	99
Ruptured ectopic pregnancy	1	120	13,100	92	102.0	Furunculosis	1	32	17,500	....	100.2
Spastic colitis	2	117	7,200	75	98.6	Acute ruptured appendix	4	31	21,200	88	101.8
Hyperplasia of endometrium	3	113	6,300	....	98.6	Acute vesiculitis	1	30	17,500	....	103.2
Ischio-rectal abscess	1	102	12,900	....	102.4	Pneumonia	4	22	8,600	81	101.2
Gastric malignancy	4	101	9,100	81	98.6	Acute pelvic inflam.	16	16	13,500	78	100.9
Fibroid uterus	4	100	8,100	60	98.6	Pseudo myxoma peritonei	1	15	8,300	89	98.6
Epilepsy	1	100	6,100	....	98.6	Puerperal infection	2	14	12,200	86	99.8
Pelvic relaxation	10	95	7,200	64	98.6	Secondary anemia	1	13	10,300	68	98.6
Hysteria	1	95	9,700	....	98.6	Pernicious anemia	1	12	3,600	14	98.6
Acute unruptured appendix	2	79	15,800	78	100.0	Spinal meningitis	1	9	14,100	....	102.4
Chr. pelv. inflammation	8	72	8,600	68	98.6						
Ovarian cyst	5	70	8,700	70	98.6						

applicable. Friedlander[2] in 1924 advocated the estimation of the rate of sedimentation as a valuable diagnostic and prognostic sign in gynecologic work, stating that it foretold the safe time for operability in cases of pelvic inflammation better than any other test. Wurzburger[3], Frosch[4], Arcieri[5], and Polak and Mazzola[6] have since then substantiated Friedlander's views. Baer and Ries[7] find that the test is of further value in determining the presence or absence of infection in incomplete abortion. According to Newman[8] the sedimentation time is lessened in carcinoma, decreasing with the spread of the malignancy. On the other hand, Cherry[9] does not find sedimentation time a valuable index as to time of operability in pelvic inflammatory disease. He is substantiated in this view by Henry and Schmitz.[10]

The exact value of any clinical procedure can be definitely determined only by the accumulation and tabulation of large series of cases. It is with the hope that the series here reported, when added to similar reports by other authors, may warrant accurate deductions, that the following statistics are published.

The erythrocytes of citrated whole blood will, if undisturbed, gravitate downward. This settling of the red blood cells is known as sedimentation. That the rate of sedimentation is accelerated, when the individual from whom the blood is derived is suffering from certain diseases, is an established fact. It is on the change in rate of sedimentation that the clinical value of the test depends. Many theories have been advanced to account for this acceleration but none as yet has been definitely proven. Animal experiments are at present in progress with the hope that additional information may help to settle the question. Suffice it to say that these investigations point toward a disturbance of the electrophysical equilibrium of the various components of the blood. Also, it is felt that the absorption of the products of infection and necrosis play fully as important a role in the production of this electrophysical disturbance as do either the nature or virulence of the infecting organisms.

Table 2. Acute appendicitis.

Unruptured Appendix					Ruptured Appendix				
Case Number	Sedimentation Time	W. B. C.	% Leucocytes	Temp.	Case Number	Sedimentation Time	W. B. C.	% Leucocytes	Temp.
1	85	24,500	90	100.2	1	15	17,850	81	101.6
2	72	7,400	68	99.8	2	65	16,200		102.4
					3	15	17,500	92	101.8
					4	30	33,500	91	101.4
Average	79	15,800	78	100	Average	31	21,200	88	101.8

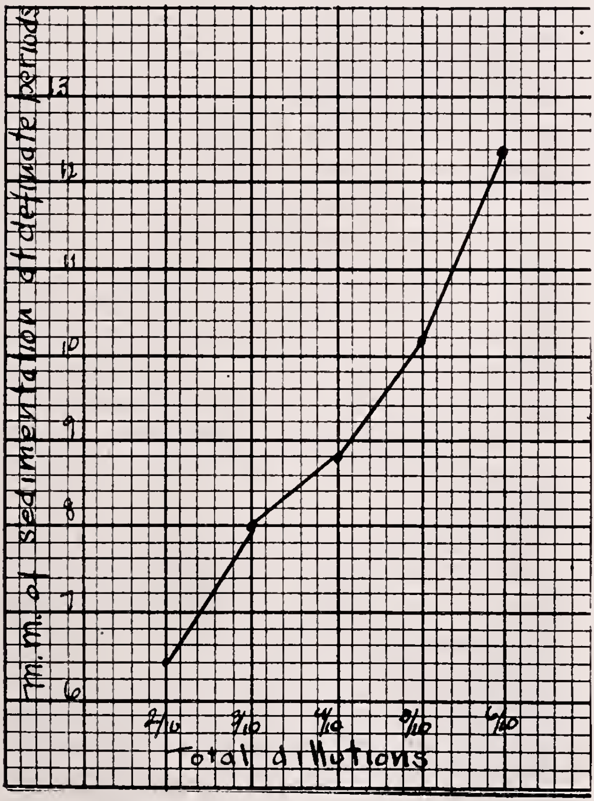

Fig. 1. Effect of experimental anemia on sedimentation.

TECHNIC

The technic here employed is a slight modification of that advocated by Linzenmeir[1] and Friedlander[2]. Hard glass tubes, five millimeters in diameter and of sufficient length to contain exactly one cubic centimeter, were used. These tubes were marked eighteen millimeters from the top. Two-tenths of one cubic centimeter of 5 per cent sodium citrate, freshly prepared and filtered, was placed in each of two tubes. Five to ten cubic centimeters of blood were then drawn into a luer syringe from the basilic vein, each of the sedimentation tubes filled to the top, and the blood and citrate mixed. The remainder was placed in a test tube containing a few crystals of sodium oxalate from which red and white blood counts, differential counts and hemoglobin estimations were subsequently made. After thorough agitation of the sedimentation tubes, the latter were placed in the upright position at room temperature and the time necessary for the red blood cells to gravitate to the eighteen millimeter mark noted. Should any marked discrepancy occur in the sedimentation time of the two tubes, the test was repeated. Not only did this method save repeatedly bothering the patient for the various tests, but it seemed to allow for more accurate comparison between them, as the blood for each was obtained simultaneously.

CLINICAL AND EXPERIMENTAL DATA

The sedimentation test was done on one hundred twenty-one different patients. In many instances it was repeated two and three times so that a total of one hundred eighty-two reactions is here reported. Figure 1 gives a general classification of these cases as compared with the white count, the percentage of polymorphonuclear leucocytes and the temperature. Where more than one case fell under any specific diagnosis the average of all such cases is here tabulated.

In the first column of Table 1 were placed all cases where the sedimentation time was greater than sixty minutes. This period of time was chosen arbitrarily because in the work of previous authors a sedimentation time of less than one hour was indicative of active infection, while one of greater length was found only when an infection, if present, had become quiescent. In studying the cases where the sedimentation time was more than one hour it is interesting to note that there was one case of ischiorectal abscess with a sedimentation time of one hundred two minutes. The abscess was subsequently drained and a considerable amount of pus obtained. Here one is forced to the conclusion that the leucocyte count (12,900) and the temperature (102.4° F.) were more valuable indications of the presence of infection than the sedimentation time.

Again, it is interesting to note that the average sedimentation time in acute appendicitis with unruptured appendix was seventy-two minutes, while the average white count and temperature in this condition were 15,800 and 100° F. respectively. Again, it would seem that sedimentation time is of less value in denoting the presence of appendiceal infection than other available methods. However, if these results be compared with those obtained in cases of appendicitis with ruptured appendix a marked contrast is seen. There were four such cases in which the average sedimentation time was thirty-one minutes, the white blood count 21,200, the polymorphoneuclear percentage 88 and the temperature 101.8° F. The figures for these cases are found in Table 2.

In one case of this series, case 2 of the ruptured group, the sedimentation test was taken about six hours before operation, while in all other cases the test was made just prior to operation. It is, therefore, possible that at the time this test was made the appendix had not yet ruptured. Such a contrast is sufficiently striking to call attention to the possibility that this test may prove to be of value in differentiating between ruptured and unruptured appendicitis. It is the cases of appendicitis, among others, which have suggested the possibility that the rapidity of sedimentation is due fully as much to absorption of toxic products, as to the virulence of the infecting organism.

With the exception of appendicitis with unruptured appendix and ischiorectal abscess, the results in the first group, so far as the sedimentation time was concerned, are what would be expected.

In studying the second group of cases, or those in which the sedimentation time was below sixty minutes, the results again conformed to what would be anticipated, with the exception of two cases of anemia. One of these, a case of secondary anemia, had a sedimentation time of thirteen minutes, a red blood cell count of 2,750,000 and a hemoglobin estimation of 66 per cent. This case was also diagnosed as a "chronic alcoholic." It is possible that the latter condition may have had some effect on the sedimentation time. The other case, one of pernicious anemia, showed a sedimentation time of twelve minutes, a red blood cell count of 1,210,000 and a hemoglobin estimation of 34 per cent. So far as could be determined, there were no foci of infection present in either case. Cherry[9] has already pointed out that, in cases of marked anemia, the sedimentation time is definitely lowered. This condition must therefore be kept in mind in determining the relative value of any sedimentation time. That this is true was further shown by the production of an experimental anemia in vitro.

Sedimentation tests were made with the blood from ten healthy rabbits. In each case the blood was diluted with 0.1, 0.2, 0.3 and 0.4 c.c. of physiologic salt solution. The amount of sedimentation was noted after 1, 2, 3, 4, 7, and 18 hours. The results obtained were then plotted, giving the curve shown (fig. 1). This represents the composite curve of all readings, and would seem to indicate that the sedimentation time decreases with the increased dilution of the erythrocytes.

When, however, the effect of anemia on the sedimentation rate as shown by the present series was studied, the results were not so uniform. Only cases where there was no evidence of infection were used for this study. There were forty-one such cases available. The average sedimentation rate for progressively increasing erythrocyte counts and hemoglobin estimations were charted and curves plotted (fig. 2).

Although there is, in a general way, an increase in the sedimentation rate as the degree of anemia becomes increased, the curves lack the uniformity of the experimentally produced anemia. However, it must be remembered that all of these cases possessed pathology other than anemia, which may have had some effect on the rate of sedimentation. The most that can at present be said is that marked degrees of anemia exert a definite influence on the sedimentation rate. This condition must, therefore, be taken into consideration when interpreting the sedimentation test.

SEDIMENTATION AS A DIAGNOSTIC MEASURE

As has been previously pointed out, the rate of erythrocyte sedimentation may, after the study of a larger series of cases, be of value in differentiating between ruptured and unruptured appendix.

The sedimentation time in ectopic pregnancy, as given by various authors, ranges from ten to three hundred minutes. However, the majority place it at about one hundred forty minutes. There was

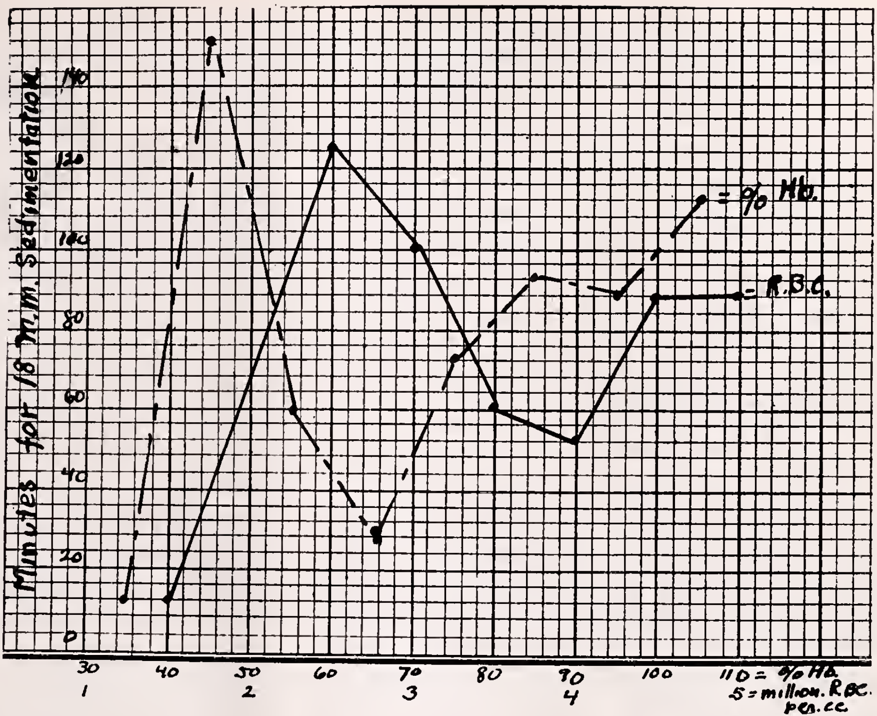

Fig. 2. Relation of red blood count and hemoglobin percentage to the sedimentation rate.

only one case of ectopic pregnancy in the series. In this instance the sedimentation time was one hundred twenty minutes. The test was made after definite rupture with free blood in the peritoneal cavity had occurred. This figure coincides closely with that given by the majority of authors for ectopic pregnancy. Should further investigation show this to be correct, it is felt the sedimentation test would be of extreme importance in differentiating between ectopic pregnancy and acute infections of the adnexa. There were two cases in this series, both presenting histories very suggestive of ectopic pregnancies and having temperatures of 98.8° and 99° F., which were treated both conservatively because of sedimentation times of sixteen and twenty-one minutes respectively. Both eventually proved to be acute pelvic inflammatory conditions.

An interesting illustration of the value of sedimentation in the differentiation between subacute pelvic inflammatory diseases and ovarian cyst, is found in the following two cases.

Case E-2017, admitted to Multnomah County Hospital Nov. 2, 1925, complaining of pain in both lower quadrants. Pain was of two months' duration and of a dull aching nature with sharp exacerbations for the past two weeks. Moderate vaginal discharge for two weeks. Had been exposed to gonorrhea. Examination showed a relaxed vaginal outlet, no involvement of Skene's or Bartholin's glands. Cervix posterior, uterus forward but less movable than normal. In the left fornix was a tender mass the size of a lemon. There was the sensation of induration in the posterior cul-de-sac. Laboratory examination: Urine negative; R. B. C., 4,160,000; Hb., 77 per cent; W. B. C., 7,770; temperature normal; sedimentation time twenty-three minutes. Preoperative diagnosis: Bilateral salpingitis with probable left tuboovarian abscess.

Case E.-1992. Age 16. Admitted to Multnomah County Hospital Oct. 29, 1925, complaining of pain in the left lower quadrant of three weeks' duration. Pain of a dull constant character with occasional sharp exacerbations. Was exposed to gonorrhea one month previously. Examination showed a moderately profuse vaginal discharge, smears of which were positive for gonorrhea. Fundus in second degree retroversion with a soft tender mass in the left fornix. Laboratory examination: Urine negative; Wassermann negative; R. B. C., 4,240,000; Hb., 88 per cent; W. B. C., 6,500. Temperature normal; sedimentation time ninety-eight minutes. Preoperative diagnosis: Subacute salpingitis with a possible left tuboovarian abscess.

Here were two cases practically identical as to history and physical findings. The laboratory examinations also compared favorably except for the sedimentation time which in the former was twenty-three and in the latter ninety-eight minutes. Both cases were operated upon the same day. In the first instance the postoperative and pathologic diagnosis was subacute purulent salpingitis of the gonorrheal type. In the second the correct diagnosis was simple cystoma of the left ovary. Had more faith been put in the sedimentation test in the latter case the presence of an acute or subacute infection would have been ruled out.

SEDIMENTATION AS AN INDEX OF SAFE TIME FOR OPERABILITY

As has been stated previously, much has been said both for and against the value of the sedimentation test as an index of the quiescence of infection and the arrival of a safe time to carry out operative procedures in cases of pelvic inflammation. In an attempt to throw further light on this point the seventeen cases of this series operated on for pelvic inflammatory disease were studied. The number of postoperative febrile days and the number of postoperative hospital days were both compared with the various methods of determining the quiescence of an infection. These methods consisted of determining the sedimentation time, the leucocyte

Table 3. Relative value of various tests for safe time of operation.

	Post-Operative Temperature 5 days or less			Post-Operative Temperature 6 days or more			Post-Operative Hospital Days 14 or less			Post-Operative Hospital Days 15 or more		
	Test Normal	Test Abnormal	% Test Proved Correct	Test Normal	Test Abnormal	% Test Proved Correct	Test Normal	Test Abnormal	% Test Proved Correct	Test Normal	Test Abnormal	% Test Proved Correct
Sedimentation time	4	4	50	1	7	87	5	2	71	1	9	90
Leucocyte Count	5	3	62	4	2	33	5	2	71	6	2	15
% Polymorphonuclear cells	4	2	66	4	2	33	4	2	66	4	2	33
Pre operative afebrile days	5	1	83	6	2	25	7	0	100	7	3	30

count, the percentage of polymorphonuclear leucocytes and the number of preoperative afebrile days. As has been stated, a sedimentation time of less than sixty minutes is indicative of quiescence. The normal leucocyte count was considered as 10,000 w.b.c. per c.c. of blood, a count of more than 10,000 indicating activity of infection. It is interesting to note here that Cherry[9] considers a pelvic inflammatory disease with a leucocyte count of less than 16,000 as being safe for operation. Again, a polymorphoneuclear leucocyte count of more than 73 per cent was considered as abnormal. Finally a case was considered as quiescent, as far as the preoperative afebrile days test was concerned, only when there had been a normal temperature for at least fourteen days preoperative. Table 3 gives the results obtained from this study.

The cases were divided into two groups so far as the postoperative febrile days were concerned. In the first group were placed those cases having a temperature for five days or less. This was done because it was felt that there occurs normally a moderate rise of temperature for a few days following major operations on the pelvic organs. This rise is probably due to absorption and is irrespective of infection. However, it was not felt that such fever should remain more than five days. Accordingly all cases having a rise of temperature for a longer period were considered as septic. This contention was borne out in many cases by the appearance of deep seated wound infections, prolonged pelvic drainage, or in a few instances by the localization of infected areas in the pelvis necessitating culpotomy and drainage.

From Table 3 it will be seen that 50 per cent of cases having what has arbitrarily been termed a normal convalescence, had a lowered sedimentation time. On the other hand, when the patients with a definitely febrile convalescense are considered the sedimentation test was abnormal in 87 per cent of cases. In this latter instance the leucocyte count, the differential count and the number of afebrile preoperative days yielded a correct prognosis as to a febrile or afebrile convalescence in only 33 per cent, 33 per cent and 25 per cent of cases respectively. This would indicate that, although occasionally cases with lowered sedimentation times can be operated on with safety, more frequently such cases have a definitely complicated convalescence. In this series at least, the sedimentation test was by far the most correct method of determining the quiescence of the pelvic infection.

Again, when the number of postoperative hospital days are considered a similar conclusion is reached. In 71 per cent of cases having a normal postopertaive hospital stay the sedimentation time was more than one hour, and was surpassed only by the preoperative afebrile days test. On the other hand, sedimentation proved again to be the most valuable method of foretelling an abnormally prolonged stay, being correct in 90 per cent of cases as compared to 15 per cent, 33 per cent and 30 per cent of correct prognostications, respectively, by the other methods.

SUMMARY

As has been stated before, it is felt that this series of cases is too small to draw any definite conclusions, and the results here obtained can be of value only if confirmed by other similar series. However, it is felt that the sedimentation test, if intelligently used in conjunction with the other available methods, is of great help to the gynecologist as a diagnostic method. It is further felt that this test is the most reliable one so far advanced in determining the safe time for operability in pelvic inflammatory disease.

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EPIDERMOPHYTOSIS *

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The importance of fungus infections and the prominent role they play in the etiology of various dermatoses is one of the outstanding advances in the field of dermatology during the past ten years. Among the more common of these infections, if indeed not the most common, is ringworm of the hands and feet which generally is designated epidermophytosis. Owing to the fact that the disease in many cases simulates eczema, the term eczematoid ringworm is often employed. This at once conveys the impression of an eczema or an eczema-like eruption due to a fungus infection and for practical purposes, the disease may indeed be described as an eczema of the hands and feet caused by a vegetable parasite or fungus.

Epidermophytosis is a disease involving the skin of the feet and hands and at times the crural and axillary regions. It is caused by a fungus, generally the epidermophyton inguinale, and is characterized primarily by the formation of typical grouped deep-seated, thick-walled vesicles, and secondarily, by the formation of scales which desquamate, leaving denuded, glazed appearing areas. It is today considered one of the common dermatoses. This is due partly to the fact that many cases formerly considered eczema are in reality fungus infections, and partly to an actual increase in the disease.

Although its true nature was suspected many years ago, epidermophytosis may be considered a comparatively new disease which gained its foothold during the time of the World War. Since that time it has become definitely more prevalent.

SYMPTOMATOLOGY

When first observed the primary lesion of the disease is a thick topped, deep seated vesicle. Frequently, however, before it appears on the surface of the epidermis, it may be felt as a firm shot-like papule in the skin. The vesicles usually appear in groups and although they may cover the whole surface of the hand or foot, they are commonly observed along the edges and sides of the fingers or toes. In other words, they are located on the opposing surfaces of the digits. They vary in extent and number; at times only a few lesions are present; at other times, the hand or foot may be literally studded with the vesicular lesions.

The center of the vesicle has a pale steel blue color, which in older lesions gradually changes to a brownish hue. They have been described as having the appearance of boiled sago grains. When the lesions are numerous, they may be so closely set as to coalesce, thus forming larger loculated vesicles.

Involution takes place either by a rupture of the vesicle and discharge of the exudate, or by absorption of the fluid contents. In the former event the fluid which is a clear serous exudate is discharged and the vesicle has thus been transformed into a distinctly pitted cavity; the grouped lesions thereby assuming a pitted honeycombed appearance. The contents of the unruptured vesicles are gradually absorbed, leaving a thickened scaly brownish stained spot. During this stage of the process, scaling and desquamation are prominent features. This desquamation often gives rise to larger and smaller denuded areas having a moist red appearance. Crops of new vesicles often appear in the surrounding healthy skin so that the whole picture presents a multiformity of lesions. Subjectively they are occasionally attended by itching or itching and burning sensations of variable intensity. At the onset of an acute attack these symptoms may be the source of considerable discomfort to the patient.

As a further complication, the itching and burning sensations lead to scratching and friction with resultant excoriations and thickening of the skin. Thus the disease assumes many of tht characteristics of ordinary eczema.

Whitefield described three types of the disease: (1) Vesicular, (2) intertriginous, (3) hyperkeratotic.

The vesicular type shows a predominance of vesicular lesions, and although it tends to run a chronic course, it is characterized by alternate periods of apparent quiescence and acute exacerbations.

The intertriginous type occurs on the feet between the toes. This is a chronic form of the disease and generally is so mild in character that the patient is often unaware of its existence. Here the interspaces of the toes are lined with a white sodden epidermis which has a tendency to be thrown off in thick scales, leaving the underlying epidermis red and moist. Owing to the fact that the fungus thrives best in this environment of moisture and natural heat, the diseased tissues reveal on microscopic examination, numerous mycelial threads. This type is of clinical importance, therefore, chiefly as a source of infection and may at any time flare up and spread to other regions of the body.

The hyperkeratotic type is manifested by dry

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thickened scaly plaques or callosities on the soles of the feet and occasionally on the palms. This type resembles a chronic squamous or tylotic eczema, showing at times deep fissures. In these cases the thick patches on the plantar surface of the heel often have an orange colored tint.

The disease on the hands is generally of the vesicular type. The lesions appear as sharply circumscribed, round or polycyclic areas, showing the characteristic deep seated vesicles, erythema and scaling. They have a predilection for the sides and webs of the fingers and extend backward over the dorsal surface and also involve the center of the palm. At the onset the vesicles make their appearance in the clear skin but as the disease progresses it gradually assumes a more inflammatory character and thus resembles an erythematovesicular dermatitis. These are the cases most often confused with ordinary dermatitis or eczema.

On the feet the lesions of the vesicular type are found around the toes and extending back over the plantar surface. A favorite site is on the inner surface of the arch. They consist of the typical grouped, deep seated, thick walled vesicles in various stages of involution, the denuded reddened areas and pitted honeycombed areas described above and of thickened dried scales. Itching is at times an annoying symptom.

The nails of the hands and feet occasionally show involvement. The body of the nail is discolored and often has a pitted appearance, and the free border shows a mass of thickened adherent scales. In well advanced cases, the body of the nail becomes soft and crumbles when scraped with a blunt curette.

The condition designated tinea cruris or eczema marginatum is a form of the disease caused by the same fungus. It attacks the skin in the genitocrural region and occasionally the axillary regions. It presents a sharply defined erythematous papulovesicular eruption extending from the genitals outward over the adjacent skin of the thigh. As the process recedes, the area becomes scaly in appearance. In some cases the eruption extends back over the perineum to the anal region. The itching incident to the heat and moisture of this region leads to thickening and lichinification of the skin. A certain percentage of the so-called cases of pruritis of the anal region are therefore undoubtedly due to the invasion of the tissues by this organism. The general body surface is rarely involved. In these cases the lesions consist of superficial erythematous scaly areas on the trunk, arms and legs.[1] Butler mentions an unusual case, which the writer also observed, in which the infection was located on the scalp.

ETIOLOGY

The organism generally accepted as the causative agent is the epidermophyton inguinale. It differs from the trichophytons in that it invades the epidermis rather than the hair. The proper classification of the fungus is still in a state of confusion, owing to the variation in the different strains isolated by individual workers. Morphologically, the fungus appears under the microscope as a network of mycelial threads. The threads are of uniform thickness and highly refractile. Branching takes place at right angles, and under the high power objective distinct septa are observed with segments of varying length, in places short and bead-like, in others long and tortuous.

The demonstration of the fungus in tissue scrapings from lesions on the feet is quite readily accomplished, but for some reason or other in clinically identical cases on the hands, it often requires long continued search.

The fungus grows rapidly on glucose agar and Sabourad's maltose agar. It lives for many months in detached squames. Tissue scrapings preserved in glass containers or between slides for six months or more have produced positive cultures of the fungus. This accounts for the fact that the disease is spread among those frequenting bathing beaches, gymnasia and clubs, where common shower baths are used by the members. Not infrequently new cases originate as a result of the disease in other members of the family.

INCIDENCE

Epidermophytosis generally occurs more frequently on the feet than on the hands, notwithstanding the fact that the patients are more prone to seek relief when the hands are involved. In a recent series of 94 private cases, in which my records were complete enough for such a tabulation, the disease involved the feet only in 41 cases, the hands only in 21 cases and was present on both the feet and hands in 32 instances. In this latter series of 32 cases the disease had in most instances been present on the feet for some time before the hands became involved.

DIAGNOSIS

Diagnosis rests in most cases upon the presence of the typical group deep seated thick walled vesicles, the characteristic denuded and pitted areas, the location of the lesions, and the tendency to recurrence, usually with the onset of warm weather.

Furthermore, the history of previous attacks with particular reference to the latent intertriginous type between the toes and in the crural regions. Finally, the diagnosis is confirmed by microscopic demonstration of the fungus in tissue scrapings.

Obviously the differentiation of the disorder from ordinary eczema is of chief importance. It is generally recognized by dermatologists that many cases formerly considered eczema were in reality fungus infections. The papulovesicular eczemas occurring on the dorsal surface of the hands are most confusing. The patches of eczema are usually ill defined. The vesicles are superfical and rupture easily. The lesions of eczema are usually more erythematous and the erythema is present from the onset of the eruption, whereas in epidermophytosis the erythema is a secondary symptom. Itching is generally more pronounced in eczema. The squamous type of eczema occurring on the palms is generally symmetrical and does not have the sharply defined border of the hyperkeratotic type of eczematoid ringworm. Pomphylox or dysidrosis generally occurs in warm weather and is associated with excessive sweating. It usually covers the whole surface of the hands and feet and runs a shorter course. Here again, many cases of so-called pomphylox have revealed the presence of fungi in the vesicles.

TREATMENT

While the treatment of this disease is often difficult, many of the cases respond readily to proper treatment, regardless of the duration of the illness. It is well to bear in mind the fact that epidermophytosis is an infectious and contagious disease and for that reason the patient should be warned to take the proper precautions necessary for the protection of his family and others. Furthermore, the patient should be advised and urged to continue the treatment for several weeks after all apparent symptoms have disappeared.

There is no specific for the disease, but in the majority of cases Whitfield ointment may be considered standard treatment. Its composition is as follows:

Salicylic acid	2.0
Benzoic acid	4.0
Petrolatum	30.0

Various ointment bases may be substituted for the vaseline. It is frequently necessary to reduce the strength of the ointment to avoid irritating effects.

After the ointment has been applied for several days the keratolytic action of the salicylic acid causes a desquamation of the diseased tissues and it may be stated that successful treatment depends in large measure upon a thorough peeling of the skin. At this stage of the treatment, beneficial results are at times obtained by painting the surface with a 15 to 25 per cent silver nitrate solution. Mild doses of x-ray are a valuable adjunct treatment, particularly in the markedly inflammatory cases. In the acute vesicular type, compresses of potassium permanganate solution or resorcin solution are often beneficial. Another preparation recently advocated by White[2] is a 2 per cent aqueous solution of mercurochrome-220 soluble. This is applied daily.

BIBLIOGRAPHY

1. Butler, J.: N.W. Med., Oct., 1922.
2. White, C. J.: Arch. of Derm. and Syph., 15:387, Apr., 1927.

HYPEREMESIS GRAVIDARUM *

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It is estimated that from one-third to one-half of all pregnant women suffer from nausea or vomiting or both. Those who cultivate intellect at the expense of physical and nervous stamina are more frequently affected. The morning nausea, and perhaps vomiting, need not cause great concern; usually it is easily controlled. The symptoms start from four to six weeks after the last menses, and one may predict almost exactly the time, eight weeks later, when they will cease spontaneously. In certain cases, however, the vomiting may gradually increase in severity or it may be very severe at the onset and the patient will vomit all solid food and liquids taken by mouth. In this form, so-called pernicious vomiting, one is met by the problem of control, and the clinical resources of the attending physician may be taxed to the utmost.

It has been customary to divide vomiting of pregnancy, according to the supposed cause, into three general groups: reflex, neurotic, and toxic. It has been assumed that reflex vomiting is the result of malposition of the uterus or some pathologic condition, usually of the pelvic organs, such as uterine fibromyoma or ovarian cyst. At the present time, however, the "reflex" vomiting is given little attention, although usually attempts are made to relieve malposition, and appropriate treatment is advised for gross lesions. The extent to which neurosis may influence severe vomiting apparently of toxic origin,

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and the influence of toxemia, even though slight, in every case of vomiting, are often difficult to determine. Many instances of vomiting apparently from neurosis can be cited. Rarely is severe vomiting noted in the pregnant unwed woman, whose mind is filled with concern over her condition rather than her discomfort.

Various hypotheses have been advanced concerning the cause of vomiting in the so-called toxic group. The chief of these may be divided briefly into: (1) foreign protein absorption; (2) deficiency of corpus luteum secretion, of thyroid secretion, of suprarenal secretion, or of hepatic function; (3) hypochlorhydria; (4) carbohydrate deficiency, and (5) dehydration.

The hypothesis that there is something, perhaps a protein, elaborated in the developing placenta or fetus which may have a toxic action on the maternal organism, has neither been proved nor refuted. The patient's rapid recovery from vomiting, which almost invariably follows interruption of pregnancy, gives credence to this explanation.

The corpus luteum is supposed to be necessary for the continuation of pregnancy in the early months and it has been asserted that the nausea and vomiting of early pregnancy is due to deficiency of secretion from the corpus luteum. Hirst, who has been a strong advocate of this hypothesis, advised the employment of extract of corpus luteum as a cure for hyperemesis, and relief following its use has been reported in many cases. Others have reported favorable results after the use of epinephrin.[7] Mann and Higgins have recently demonstrated retardation of the normal filling and emptying of the gallbladder in pregnant animals. This suggests several questions. Is such retardation associated with lowering or abnormality of certain hepatic functions? Is it a part of lowered or deranged activity of some or all of the digestive functions? Is it either due to or a part of reversed intestinal peristalsis during pregnancy, as suggested by Alvarez? Artz states that the free hydrochloric acid and total acidity of the gastric contents are lower in the pregnant than in the nonpregnant woman and that this is more marked early in pregnancy, when nausea and vomiting commonly occur. He found that dilute hydrochloric acid by mouth relieved or favorably influenced the early nausea and vomiting in certain cases.

Carbohydrate deficiency was reported independently by Duncan and Harding and by Titus, Hoffman and Givens. Both groups of authors believed that the symptoms of hyperemesis gravidarum were due to lowering of the glycogen reserve in the liver. They likened the condition of the liver to that found after starvation and reported cures by giving carbohydrate, particularly in the form of glucose. Harding and Van Wyck have since modified their views somewhat, stating that the dehydration factor in prolonged vomiting is of equal, if not of more importance than carbohydrate deficiency. The view with regard to deficiency of carbohydrates has been rather widespread, and a diet high in carbohydrates is given in the mild case, and glucose is used in the severe case. Thalhimer has gone further and uses insulin as an adjunct to glucose in the treatment of hyperemesis.

While the symptoms of nausea and vomiting associated with this condition are self-evident, there are several other symptoms that are worthy of mention. Salivation of varying degree is often present in severe cases of vomiting and may even be present if the vomiting is not severe. As the vomiting progresses, dehydration is manifested by dry skin and sunken eyes. The peculiar sweet-cider odor of the breath (acetone breath) is present. Usually at this time acetone and diacetic acid may be found in the urine, and as the patient grows worse, the sclerotics take on an icteric tinge and the pulse rate is increased. At the same time the blood pressure is distinctly lowered and, in fact, even in mild cases of hyperemesis the blood pressure is usually below normal. It has been noted in cases of severe hyperemesis that the degree of prostration is greater after a few days of vomiting than when vomiting is due to some other cause, such as migraine or gastric crisis.

TREATMENT

The treatment of vomiting of pregnancy varies with the severity of the condition, and to some extent with the individual case. The literature contains reports of so many strongly advocated methods of treatment, each with its high percentage of cures, that in many instances the question may be raised as to how much of the success may be attributed to suggestion and reassurance rather than to specific treatment. The so-called neurotic or psychic factor must be taken into account, even in the more severe cases. In many instances severe vomiting can be averted if proper care is given before dehydration and starvation, with associated degenerative changes in the liver, take place.

For the mild form of hyperemesis, the patient is advised to eat at least five small, dry meals daily, consisting largely of fruit, and carbohydrates, such as crackers, toast and cereals. Fried or rich foods should be avoided. Rest for an hour after each meal is advised. Fluid should be taken freely between meals up to from 1500 to 2000 c.c. daily; it should not be taken within twenty minutes before a meal or within an hour after a meal. Since most of these patients are more or less worried and nervous, sedatives may be used freely. An effervescing tablet containing fifteen grains of sodium bromide three or four times a day is usually efficacious. In some cases phenobarbital may be given instead of bromide. The patient is advised to regulate the bowels and to avoid undue strain, either from exercise or from the overexcitement of social gatherings or crowds. She is also advised to be out of doors part of the day if possible. In certain cases the gastric secretions are strongly acid and in others there is evidence of decreased acidity. In the former group alkalies are used with good effect and in the latter dilute hydrochloric acid has recently been shown to be of value.

ILLUSTRATIVE CASE

"Ovarian dysfunction type" of hyperemesis. A woman, aged thirty (third pregnancy), came to the clinic in November, 1923, because of a goiter. She complained of a sense of pressure in the neck, and nervousness. She was not nauseated, but her appetite was not as good as usual. The last menstrual period had occurred about five weeks previously.

There was no evidence of hyperthyroidism and on account of the pressure, although pregnancy was suspected, partial thyroidectomy was advised, and performed two days after admission. Following this hyperemesis was rather severe and hard to control. Bromides by rectum caused discomfort and could not be retained. Phenobarbital was of some value, but definite improvement seemed to occur only after the intravenous use of the extract of corpus luteum, which was given twice daily for eight days. The patient did not at any time seem ill enough to require glucose intravenously. She could always retain some fluid by mouth. It is quite possible that the action of the extract of corpus luteum was largely due to suggestion.

The vomiting which occurs during pregnancy may be due to some complication not the result of pregnancy. The following cases are examples.

ILLUSTRATIVE CASE

Hyperemesis with hyperthyroidism. A woman, aged twenty-five (second pregnancy), had experienced a mild type of hyperemesis during the early part of the first pregnancy which was controlled by the usual dietary measures and bromides. During the second pregnancy, nausea began as before and continued to the third month. Then vomiting became acute and she was placed in hospital December 14, 1925.

The pulse rate was 114. The systolic blood pressure was 140 and the diastolic 108; this was contrary to the usual condition as the blood pressure ordinarily is below normal during the period of vomiting. This, together with the unusual restlessness of the patient, suggested the possibility of hyperthyroidism. A basal metabolic rate determination, December 16, was +25. At this time the pulse rate was 135, and the systolic blood pressure was 136, the diastolic 82. On December 16, compound solution of iodine (Lugol's solution) was started in ten drop doses three times a day. On the following day the pulse rate had dropped to 120. The basal metabolic rate December 18 was +10 and the pulse had dropped to 110. Iodine was continued and all other medication was discontinued; the pulse dropped to 90 on the tenth day. There was no further recurrence of vomiting and, although symptoms of hyperthyroidism continued, the patient was carried through pregnancy, and to normal confinement June 6. Five weeks later a degenerating colloid adenoma was removed.

This case is of especial interest as it brings up the question of differential diagnosis, the mixed picture of the "nervous" vomiting of pregnancy plus the crisis of hyperthyroidism, and the quick response to iodine.

ILLUSTRATIVE CASE

Mechanical hyperemesis. A woman, aged thirty-four (first pregnancy), was referred to the Mayo Clinic by her family physician in the eighth month of pregnancy (April, 1925) on account of severe vomiting for the preceding two months. Appendectomy and a "hammock" operation on the stomach had been performed elsewhere in 1919, and later in the same year gastroenterostomy. She had not vomited early in pregnancy.

Examination disclosed the so-called acetone breath. The patient was considerably dehydrated and her expression was anxious. After rest in bed and the ingestion of small amounts of fluid frequently and dry meals, with the use of bromides, she improved rapidly, and confinement six days later was normal.

It seemed reasonable to suppose that the vomiting in this case may have been due to some distortion of the gastroenteric stoma, associated with the "hammock" operation on the stomach.

Most women who are nauseated and vomit will be relieved if treated early. Most of those who vomit severely have allowed the condition to become advanced before consulting their physician. Those who retain little or no food or liquid, who have lost some weight and are dehydrated, come within the group in which the symptoms are moderately severe. The treatment consists of rest in bed and 5 per cent glucose solution (Murphy drip), an effort being made to give the patient from 50 to 100 gm. of glucose in twenty-four hours. It has been found practicable to administer the glucose for periods of two hours with an interval of one hour during the day, and with an eight-hour interval at night. Practically all patients will improve quickly under this regimen, but should a patient not show improvement after several days of treatment, glucose should be given intravenously also. Sodium bromide should be given in large doses by rectum (up to 150 grains daily) if necessary. If sodium bromide is not retained, phenobarbital may be given by mouth or hypodermically.

During the first twenty-four to thirty-six hours, food is not given by mouth, but no restriction is placed on water or other palatable fluids. This interim also affords an opportunity to make laboratory investigations which may be of value, such as estimations of the carbon dioxide-combining power of the blood, the blood sugar, and the gastric acidity. Usually after twenty-four hours the patient may be given small dry meals and is urged to take fluid up to about two quarts daily, even though some of it is vomited. Harding has noted that with the increase of fluid intake there is an increased urine output, and coincident with this an improvement in the patient's condition.

ILLUSTRATIVE CASE

"Nervous type" of hyperemesis. A woman, aged thirty-three (first pregnancy), who appeared to be of a neurotic temperament, became nauseated at about the sixth week of pregnancy. She was advised to rest after meals, to take small frequent dry meals with fluids between meals, and was given bromides. As she was apprehensive because of the continued vomiting, she was placed in hospital for twelve days at the beginning of the ninth week of pregnancy. The vomiting was easily controlled by means of 10 per cent glucose solution given by proctoclysis and 150 grains of bromide daily. Nourishment or water by mouth was not given for the first twenty-four hours. Fluids in small quantity per os were started on the second day, and were followed on the third day by small amounts of food and an increasing quantity of fluid; on the third day 500 c.c. of fluid was given by mouth, and 1000 c.c. by proctoclysis. The fluid intake reached 2300 c.c. on the fifth day, 800 c.c. being given by mouth and 1500 c.c. by rectum. On the ninth day 740 c.c. of fluid was given by mouth and none by rectum. The emesis had subsided by the seventh day and by the ninth day the patient was taking practically a full diet.

The neurosis was undoubtedly the chief feature of this case.

Cases of severe hyperemesis or the so-called pernicious vomiting are those in which the vomiting has become progressively severe in spite of treatment, or those in which the patient comes to the physician in a serious condition. In these cases fluid must be given in order to relieve dehydration, and glucose must be given intravenously in doses up to 100 gm. daily in a 5, 10 or even 20 per cent solution, in order to spare the liver and produce a diuretic effect. The glucose may be given in combination with insulin. Thalhimer recommends twenty units of insulin hypodermically about an hour after the intravenous injection of 1000 c.c. of a 10 per cent solution of glucose and ten more units an hour after the first dose of insulin. This should be continued daily for several days, depending on the patient's condition. If the acidosis, as manifested by the odor of the patient's breath and the presence of diacetic acid in the urine, and the lowered carbon dioxide-combining power of the blood, is not relieved by glucose, a solution of sodium bicarbonate may be given by proctoclysis or intravenously. If the solution is irritating to the rectum, up to 50 gm. of sterilized sodium bicarbonate in 5 per cent solution may be given intravenously.

ILLUSTRATIVE CASES

"Neurotic type" of hyperemesis. A woman, aged twenty-one (first pregnancy), was referred to the Mayo Clinic by her physician in the sixth week of pregnancy on account of a history of vomiting for two weeks, apparently associated with an adherent retroversed uterus. The patient drove to the clinic in a small car, and possibly the jolting was responsible for the anteflexion and anteversion present on examination. The uterus was about the size of a six weeks' pregnancy.

The patient entered the hospital and was given glucose intravenously for three days. The urine output increased from 550 c.c. to 650 c.c., 1050 c.c., 1600 c.c., and 1800 c.c., in four days. She was also given ninety grains of bromide daily and water by mouth. She retained her food and seemed well enough to go home. However, at this time some relatives visited her, and she began to vomit again. Glucose was again given intravenously. Emesis continued, but the daily output of urine averaged 1000 c.c., although the patient apparently retained little or nothing by mouth. The daily intake by rectum was approximately 2000 c.c. The pulse rate did not go beyond 100, the skin was moist, and the patient did not appear toxic. After four weeks in hospital she was finally convinced that pregnancy would not end in miscarriage as she had previously been told. Normal diet was resumed almost immediately and progressive and rapid improvement followed.

"Toxic type" of hyperemesis. A woman, aged seventeen (first pregnancy), was seen in consultation with her family physician in July, 1926. She had not menstruated for three and a half months. For more than two months she had vomited almost all food taken, although she had not been in serious condition until July 1. Since then nausea and vomiting had been continuous, and two days prior to her admission to the hospital the vomiting became severe and there was severe pain in the abdomen. The vomitus had been blood tinged for two days. Several days previously she had refused to enter the hospital as advised by her physician. She was five feet two inches tall and normally weighed two hundred four pounds. She had lost forty-four pounds since the onset of her illness.

At the time of the first consultation the extremities were cold and the skin was cold and dry. The systolic blood pressure was 98 and the diastolic 62. The pulse rate was 140 and the rectal temperature 97.3. There was a marked icteric tinge of the sclerotics. The uterus was the size of a three months' pregnancy.

She was immediately brought into the hospital and 500 c.c. of 20 per cent solution of glucose was given intravenously and proctocylsis started. Six hours later 1000 c.c. of 10 per cent glucose was given intravenously, followed by 10 units of insulin and four hours later another 10 units. This dosage, with fluid by mouth and proctoclysis, was given daily for four days. This patient's condition was such that had a therapeutic abortion been attempted she would probably have died. The improvement was remarkable in view of the fact that she was practically comatose for the first three days. She was on a full diet the ninth day after admission, and was able to return home after the tenth day.

"Toxic type" of hyperemesis. A woman, aged twenty-four, the mother of three children, came to the clinic July 23, 1926, on account of weakness and stomach trouble. She gave a history of having had tonsillitis, rheumatic fever and influenza. In May of this year rather sudden dyspnea developed which lasted about ten days. This was believed to be due to a heart lesion and she was put to bed and given medicine. The condition improved, but she remained weak and exhausted, and about the first of July following an attack of nausea and vomiting she became jaundiced. However, she had no especial pain with this, but she thought she had a little fever. Prior to her arrival Lyon's duodenal drainage had been carried out, and she seemed to improve, and the jaundice disappeared entirely. Menstruation had occurred at the normal time, July 8; it was, however, of shorter duration than usual.

The patient appeared rather weak. Various examinations were made in order to establish the diagnosis. On July 31, the eighth day after admission, following the taking of tetrabromphenolphthalein tablets for roentgenograms of the gallbladder, she began to vomit again. The jaundice reappeared and seemed to be increasing in severity. It was difficult to establish a diagnosis on account of the absence of a history of pregnancy. However, the uterus was slightly enlarged and on the supposition that the vomiting might be due to toxemia of pregnancy with involvement of the liver, she was given approximately 15,000 c.c. of 10 per cent solution of glucose in a 1 per cent solution of sodium chloride intravenously in the course of eight days. This increased the urine output and caused marked improvement. At the end of eight days the jaundice had disappeared. The patient was slow to regain strength, but had gained from ninety-three pounds at the time of her admission to one hundred four pounds at the time of dismissal one month later.

It seems evident in this case that there may have been some hepatic insufficiency prior to pregnancy and that the recurrence of jaundice and severe hyperemesis may have been due to this. Apparently the patient was greatly benefited by the glucose and the large quantity of fluid.

Even in the apparently severe cases it is remarkable at times how much effect suggestion and reassurance may have in the relief of the vomiting. Duodenal feeding is of value in some of these cases on account of the fluid and nourishment, and to some extent because of the mental effect on the patient.

It is necessary to bear in mind that one may have a large series of patients with hyperemesis whose vomiting is controlled by these measures, but that sooner or later a patient will be encountered whose vomiting cannot be controlled, and whose condition steadily grows worse. Then the only hope of saving the patient's life is by emptying the uterus. Although this should be done only when all other measures have failed, it is important not to allow the patient to become so weakened and toxic that emptying the uterus will fail to save her life.

ILLUSTRATIVE CASE

"Toxic type" of hyperemesis. A woman, aged twenty-one (first pregnancy), came to the clinic for examination July 27, 1926, in the eighth week of pregnancy. She had vomited frequently for the last three weeks, and had been in hospital for a little more than two weeks, during which time she was given glucose intravenously, insulin hypodermically and sedatives. She improved under this regimen and on the fifteenth day was dismissed to go home; by that time she was on a practically full diet. She did not follow instructions and returned nine days later in a weakened condition. The pulse rate was 120 and dehydration and icterus were present. On the third day after admission, in spite of intravenous medication, the pulse rose to 140 and temperature to 100°. The output of urine was 250 c.c. in twenty-four hours. Because of this and of the onset of the vaginal bleeding, it was thought necessary to terminate pregnancy. The patient recovered rapidly and was dismissed in good condition about ten days later.

The Wassermann reaction in this case was positive, but it is difficult to determine how much this may have influenced her condition. The test of hepatic function showed dye retention, graded 2.

Our experience in the treatment of hyperemesis gravidarum leads us to believe that the best treatment known at present is a diet high in carbohydrates and a high fluid intake, with sufficient sedatives to raise the threshold of nervous irritability and anxiety. The use of dilute hydrochloric acid in certain of these patients whose gastric acidity is low appears to be a rational treatment, but as we have used this only in a few mild cases we are not in a position to give an opinion concerning its value. In severe cases the use of intravenous injections of 100 gm. of glucose daily in at least 1000 c.c. of water to be followed by insulin hypodermically has seemed to be of distinct value.

BIBLIOGRAPHY

1. Alvarez, W. C.: The Mechanics of the Digestive Tract. New York, P. B. Hoeber, 1922, p. 126.

2. Artz, F.: Gastric Juice During Pregnancy. Am. Jour. Obst. and Gynec., 12:879, 1926.

3. Duncan, J. W. and Harding, V. J.: A Report on the Effect of High Carbohydrate Feeding on the Nausea and Vomiting of Pregnancy. Can. Med. Assn. Jour., 8:1057, 1918.

4. Harding, V. J. and Van Wyck, H. B.: The Use of Fluids in the Treatment of Hyperemesis Gravidarum. Am. Jour. Obst. and Gynec., 11:1, 1926.

5. Hirst, J. C.: Corpus Luteum Extract in the Nausea of Pregnancy. J. A. M. A., 66:645, 1916.

6. Mann, F. C. and Higgins, G. M.: Effect of Pregnancy Upon the Emptying of the Gallbladder. Proc. Soc. Exper. Biol. and Med., 1927, XXIV, 930-931.

7. Sergent, Emile and Lian, Camille: Du role de l'insuffisance surrénale dans les vomissements gravidiques incoercibles. Press méd., 20:1033, 1912.

8. Thalhimer, William: Insulin and Glucose Treatment of Excessive Vomiting of Pregnancy. Am. Jour. Obst. and Gynec., 9:673, 1925.

9. Titus, Paul, Hoffman, G. L. and Givens, M. H.: The Role of Carbohydrates in the Treatment of Toxemias of Early Pregnancy. J. A. M. A., 74:777, 1920.

SUBACUTE BACTERIAL ENDOCARDITIS.*

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A consideration of subacute bacterial endocarditis must first involve a general classification of endocarditis, to show the place occupied by this particular infection, and a definition of the terms, to avoid confusion with other closely related types of endocarditis.

There is fairly general understanding of the term chronic endocarditis as referring to a sclerosis of the valves, leading to shrinking, thickening and adhesion of the cusps, often with the deposition of lime salts, and to shortening and thickening of the chordae tendinae, leading to insufficiency and to narrowing of the orifice. It would be better to refer to these cases by specific terms descriptive of the particular lesion, such as mitral stenosis, etc.

Acute endocarditis is classified as simple and malignant. Simple endocarditis always occurs with some other affection, such as rheumatic fever, chorea, pneumonia, tonsillitis, and the exanthemata. It is characterized by minute vegetations on the valves, and its differentiation from the malignant type is one of degree rather than kind, there being many gradations of severity. In the malignant or ulcerative endocarditis, the thrombi are larger and there is more evident loss of substance of the valves.

The dividing line between acute and subacute endocarditis is more or less arbitrary, and by some has been set at six weeks duration of the disease, while by others it is set at three months. Within this time limit of three months, many of the cases of simple endocarditis will be well on the way to recovery, and most of the acute malignant cases caused by streptococcus hemolyticus, pneumococcus, gonococcus and the like, running the course of acute septicemia, will have terminated fatally. Chronic rheumatic endocarditis is to be distinguished from the group at present under discussion, by the association with polyarthritis and bacteria-free blood.

Having thus limited our discussion, we have left a large residue of cases of more or less febrile illness running a course of three months to two years. The disease is characterized by a prolonged fever, active endocarditis, streptococci in the blood and embolic phenomena.

The majority of cases occur between the ages of twenty and forty, although it may affect those as young as five, or as old as sixty years. It is a little more common in males, the ratio being three to two. The most important predisposing cause is a preexisting valvular lesion usually of rheumatic origin. Many years of apparent good health follow the primary valvular insult, before the deformed valves become involved in the present infection. The deformity of the valves seems to render them more susceptible, and the infection localizes mainly in the mitral and aortic orifices. That the disease is not a lighting up of a dormant infection seems to be shown by the fact that in a number of reported cases, the involved valves have been congenitally deformed. It is believed that the main portals of entry are the throat and the teeth. Phillips calls attention to the danger of curetting after extractions, and to the danger of local anaesthesia, stating that three of his forty-five cases seemed to follow such procedures.

The types of infection noted are about 95 per cent streptococcus viridans, the remainder being influenza bacillus and occasionally other organisms. The blood may remain bacteria-free for long periods so that, while a positive blood culture is of greatest importance, a negative result means little. The causative organism is, in all cases, of low virulence, and has no tendency to pyogenic effects, even in the emboli. Bargen isolated the streptococcus viridans from thirty-five, and an alphahemolytic streptococcus from two, of forty-four patients observed, or 84 per cent positive cultures. He was able to reproduce the disease in rabbits by injection experiments in 80 per cent of rabbits so injected.

Ordinary methods of blood culture are usually unsuccessful, because the organism is anaerobic, and because it grows very slowly. A method which often proves successful is to use about 30 c.c. of blood in 300 to 500 c.c. of double strength broth, and to incubate two or three weeks. This does not eliminate the antibodies of the blood, however, and a more refined method is that published by Winans, after Rosenow. About 30 to 45 c.c. of blood is drawn, 8 c.c. of which is added to a flask of broth at the bedside. The remainder is citrated. This is then added to sterile water in tubes, to lake it. It is then centrifuged at high speed for an hour, and the small white sediment which contains the bacteria is added to tall tubes of agar and of broth, enriched with dextrose and calf's brain. Each tube represents about 5 c.c. of blood, but is practically free from hemoglobin. The broth is covered with oil. The agar tubes furnish all degrees of oxygen tension, being anaerobic at the bottom, and aerobic at the top. Bargen altered this method by the use of tall tubes with a cork at the bottom and a cotton stopper at the top. The advantage was that the tube need not be broken to get the colonies at the bottom of the. tube. Another method used by Bargen was to make blood agar plates, then pour a second layer of agar over the solidified plate, and then cover this with a layer of melted paraffin. Whatever method is used, a large quantity of blood should be drawn, and the anaerobic condition should be met in some way. It has been claimed that the petechiae and the glomerular lesions can be accounted for on the basis of cultural characteristics of the streptococcus viridans, it having a dry tenacious growth on agar and clumping in small particles which cannot be broken up easily. It is said that small clumps are dislodged from the heart valves, and lodge in the glomerular capillaries.

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The essential pathology is a proliferative verrucose inflammation of the endocardium. There is no ulceration. Eighty-five or ninety per cent of cases have either the mitral or the aortic valves involved, or both. About 60 to 70 per cent have mural vegetations. There is pericarditis in 3 per cent. The myocardium is not much involved, except by cloudy swelling. There are toxic changes, such as cloudy swelling of the myocardium, liver, kidneys, etc. The spleen is large. A characteristic glomerular lesion of the kidney is found, because of embolism. Emboli may be found anywhere, the most common infarcts being in the spleen and the kidneys. Occasionally there is cerebral embolism. Mycotic emboli in the vasa vasorum with resultant aneurysm have been reported. Petechiae in the skin are often present, and may be extremely numerous.

The symptomatology falls into two groups, symptoms referable to toxemia and those caused by embolism. The toxemic symptoms are insidious and slowly progressive, so that the patient may be ill for some time before he seeks relief. He may be able to carry on his work for some time, although not feeling well, as in the case of one of our patients who was ill for eight or nine months and attended the university for six months, before he sought medical advice. Tiring easily is usually a prominent symptom. Weakness, pallor, nausea and vomiting, diarrhea or constipation, anorexia, headache, more or less fever and night sweats complete the picture of toxemia in a typical case. However, it must be remembered that these toxic manifestations are variable as to severity, and the patient may fail to mention many of them unless he is questioned directly. To just that extent the clinical picture will then be blurred.

The embolic phenomena are variable, depending on which organ is involved. A sudden pain in the left upper abdomen, especially if followed by a friction rub over the spleen, suggests splenic infarction. Sudden hematuria, with or without lumbar pain, may indicate a renal infarct. Occasionally there are infarcts in the lungs. If the emboli lodge in the brain there may be sudden paralysis, temporary loss of consciousness, vertigo, nystagmus, aphasia or other symptoms, depending on location and size of the embolus. One of our patients was so unfortunate as to have infarction of the motor area, and paralysis from which she slowly recovered, only to have a second embolism involving the cerebellum, with nystagmus and vertigo. Incidentally, the fever, headache and paralysis in this case led a neurologist to make a diagnosis of tuberculous meningitis. A patient, who is now under observation, discovered a large blind spot in one eye one morning. This persisted for about ten days and disappeared gradually. Emboli in the skin will be referred to later.

The liver may be enlarged and is then tender. This may be another toxic manifestation, due to cloudy swelling or it may be a circulatory affair. It often leads to considerable discomfort. The symptoms of cardiac insufficiency may supervene, but have not been pronounced in the cases we have observed.

Tenderness in the sternum has been described, and may be quite pronounced. Sometimes pain and tenderness in the pads of the fingers and toes will appear. Probably these are embolic in nature. Joint and muscle pains appear, but the joints are never swollen as in rheumatic fever.

It must not be understood that all cases are so severe as to have the major symptoms recounted above. Oille, Graham, and Detweiler reported twenty-six cases of a milder type, in which they recovered streptococcus viridans from the blood, and in which there was endocarditis, or endocarditis developed during observation. Most of these cases had vague symptoms suggestive of tuberculosis, fatigue, weakness, slight fever, nervousness and the like. None of these cases had splenic enlargement and none had petechiae. Some had afternoon fever and some had fever only occasionally. Probably nearly all such cases are overlooked; these authors state that it is a more common condition than rheumatic endocarditis. If more of these milder cases were recognized, the mortality percentage would be much less than present statistics indicate.

On physical examination, the patient is pale and anemic and often somewhat pigmented. The color is sometimes described as that of coffee with milk.

The pulse is usually rapid, but if the aortic valve is involved it may be rather slow. There is usually a valvular murmur, but it may be absent if the endocarditis is mural, or if the valve involvement is not at the margin; it is said that not infrequently the vegetations occur on the mitral valve upward from the margin toward the base, and do not produce a murmur. In the more severe cases, the spleen is palpable and may be tender. The liver may likewise be enlarged and tender. The abdomen may be distended and may contain fluid. If a murmur develops during observation, it helps to make the diagnosis. One of our patients developed an aortic regurgitant murmur late in the course of the disease, recovered from the infection, and died over two years later with cardiac decompensation and acute pulmonary edema. The patient may develop a sudden darting pain in the pads of the fingers or toes. Then in twelve to twenty-four hours there is a white swelling surrounded by redness, lasting a day or so. These nodes have not been common in our experience. The fever may be high, regular or septic type, or there may be chills and fever as in malaria. In the milder cases, there may be only slight fever or it may occur only occasionally.

When they are present, petechiae constitute the single most important physical sign. They are usually one to three millimeters in diameter, reddish purple in color, without surrounding erythema. They do not disappear on stretching the skin. Their marginal outline is usually not so sharp as that of the small hemangiomata so frequently seen, and the color is darker. They are not elevated. They do not have the brown color of some of the other moles. It is sometimes difficult to be sure of their nature, in spite of extended experience in observing them. The simple practice of drawing a circle around doubtful spots with an indelible pencil will often make the diagnosis certain, because petechiae disappear in a few days, while other spots leading to confusion will be persistent. Petechiae may occur anywhere, but are more common in the axillae, on the chest, neck, and in the conjunctivae. They usually come in showers. There may be long periods when they are not present.

From a laboratory standpoint, several features are of importance. The blood culture is of great magnitude and if properly made should prove the diagnosis in most cases. However, a negative blood culture does not rule out the disease. The hemoglobin and red count are usually lowered. The icterus index is normal. About half of the cases have a leucocytosis; a normal leucocyte count proves nothing. Hematuria, either miscroscopic or gross, is common.

The diagnosis is made on four cardinal features, fever, emboli, endocarditis and a positive blood culture. Of these, the blood culture is most important. If emboli are present, they make the diagnosis reasonably certain. If these two main factors are absent, there may be considerable difficulty in establishing the diagnosis.

Fever is one of the first evidences of the disease and this usually runs on for some time so that by the time the patient presents himself the ordinary infections have been ruled out by the duration of illness. Tuberculosis must be eliminated by the usual methods; many of these patients are given a diagnosis of tuberculosis before the correct one is suspected. Rest in bed has much less effect on this type of fever than on that of tuberculosis. Malaria may be ruled out by blood smears and by quinine therapy. Typhoid fever is usually easy to exclude by laboratory methods. A chronic septic focus should ordinarily be easy to find, but at times it is extremely difficult. Pernicious anemia should be ruled out by the absence of the changes in the blood smear, usually by the age of the patient, by the normal icterus index, and by the absence of the lemon yellow color.

A lymph gland infection at the hilus or in the mediastinum may be very hard to differentiate. This, however, does not cause splenic enlargement and does not produce such rapid anemia. Often the x-ray will be of assistance. A mild pyelitis without cystitis may be confusing, but repeated examinations of the urine should clear up the diagnosis. Toxic goiter is sometimes hard to exclude, but a basal metabolism test usually aids in diagnosis.

The prognosis in the more severe cases is distinctly bad. The percentage of fatality in reported cases is well over 90 per cent. However, it must be remembered that the mild cases, which probably constitute the great majority, are not recognized and make a spontaneous recovery. Petechiae, especially if numerous, render the prognosis more serious. Severe anemia is also a bad sign, since many of these patients die from exhaustion. Cardiac decompensation makes the outlook more gloomy. The presence of petechiae has been said to make the prognosis hopeless, and such has been my experience, but Capps has reported cases of recovery after petechiae had been found.

As in the case of any disease having a high mortality, many different forms of treatment have been tried. The most widely used treatment has been that used by Capps, daily intravenous injections of sodium cacodylate, two to four grains. He states that commercial ampoules are not very dependable and that the solution should be freshly prepared every three or four days. However, one would think that a drug as stable as this should be reliable in ampoule form. He quotes Allison's experiments to show that various forms of arsenic are bactericidal in dilutions up to 1 to 3000 and exert an inhibiting influence on streptococci in higher dilutions. However, two grains of cacodylate in a gallon of blood makes the dilution about 1:30,000, and this concentration is maintained for a very short time only. Bargen treated experimental endocarditis in rabbits by this method and believes that it is of value. It must be remembered, however, that he used an average daily dose of about one grain, varying from one-half grain to three grains, in rabbits weighing from four to six pounds. The concentration in the rabbit's blood was therefore about fifteen times as great as that recommended for the human. Bargen also found that cacodylate used before injection with streptococci seemed to exert a somewhat protective influence and endocarditis was not so readily produced. The experience of some other observers has not been so favorable as that of Capps. Phillips believes that cacodylate has very little value.

Various forms of chemotherapy, such as the use of mercurochrome, gentian violet, acriflavine, mercury bichloride, collargol, silver nitrate, and colloidal metals, have been used, but I know of no strikingly successful results. I have used mercurochrome and bichloride without success.

Vaccines would hardly be expected to do much good in such an acute infection, where the patient is already being constantly vaccinated, so to speak, and the results bear out that expectation completely.

Repeated transfusions have been recommended, both to improve the anemia and to furnish immune bodies, but the results have not been striking. It has been suggested that the donor should first be immunized with a vaccine made from the organism recovered, and Howell, Portis and Beverley believe that they prolonged a patient's life by that method. However, he died about a week after the last transfusion. They report very interesting studies on the immunologic reactions after these transfusions, the opsonic index, agglutinins and complement fixation antibodies for this streptococcus reaching a high figure after each transfusion.

Rest in bed should be insisted on and supportive treatment should be carried out. Nutrition often becomes a difficult problem, because of the anorexia. Opiates are often necessary for the pain of splenic infarcts and the like.

Since the infection is by an anaerobe, it would seem rational to use some method of maintaining a high oxygen tension in the blood. I know of no reports of cases where this has been done.

Since most methods of treatment are without avail, the British writers lay great stress on prevention, urging removal of foci of infection, more prolonged care of patients with rheumatic endocarditis, and the prevention of rheumatic fever so far as possible.

THE NEWER RHINOLOGY*

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HISTORICAL

In the entire realm of medicine, with the startling and epoch making changes that the past three decades have witnessed, nowhere have conceptions undergone such noticeable modifications as in our consideration of the series of structures lined by the mucosa of the upper respiratory tract. This region, formerly regarded as of relatively minor importance, has become one of prime consideration. It was before merely an insignificant anatomic locality. It is now a factor of great moment in the search for causes of disease.

To what shall we attribute the changed attitude of medicine towards this region? It is not due to any of our recent refinements in descriptive anatomy for one will find excellent accounts of the tract in Vesalius (b. 1515), Berengar del Carpi, who lived in Bologna about 1500 and was physician to Charles the Fifth, and in the works of others of the older anatomists. Furthermore, one will find in these works quite satisfactory accounts of many pathologic conditions that are recognized today. We may smile at some of these ideas of the function of the sinuses, but that they described them in health and in disease quite accurately there is no question. There were varying quaint opinions, "that they serve to hold air before it enters the brain," "that they contain mucous humor that is distilled into the nares," "that they seem to make the voice more resonant." Some believed that the air is elaborated in them for the generation of animal spirits. Spigellius thought they were for "drawing in the odors," others, that they "contain the humor by which the eyes are moistened and lubricated." The "viscid liquid within" was supposed by many older writers to "originate in the brain." As late as the early 18th century Boerhaave (1678-1738) proclaimed that "the reason children's noses are always running is because their accessory sinuses are not sufficiently developed to hold the mucus," and much of Boerhaave's nasal pathology was based on this conception.

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Many intranasal surgical procedures date from an early medical era. Hippocrates and his sponge method of removal of nasal polypi are well known. Fabricius devised a long forceps for their ablation, and Fallopius, (d. 1562) a primitive snare that must have been quite as efficient and far more durable than similar instruments of the present day. Operations directed against the maxillary and frontal sinuses were devised and described and occasionally practiced as early as the first part of the 17th century. Jourdain, a Parisian dentist, in 1765 reported to the Royal Academy of Surgery a method of washing out the antrum of Highmore through the natural opening.

Wright, in his "History of Laryngology and Rhinology," says (p. 174), "I am sure anyone reading these accounts of operations on the antrum of Highmore for suppurative disease, will perceive that all the recent procedures which have been of late so exhaustively and frequently described have been long anticipated in surgery."

At even as recent a period as my own student days the accessory sinuses were receiving but passing notice. The text books described them in a perfunctory way as complicating the otherwise comparatively simple nasal geography. Our nose and throat lectures were covered in eight weeks. Various nasal conditions were described as entities. Much emphasis was placed on a differential diagnosis between coryza and acute rhinitis. Curative measures designed for the one were not to be confused with treatment of the other. Chronic suppurative rhinitis was a distinct disease. Its possible connection with the accessory sinuses was not considered. I have today carefully stored away somewhere in the attic—my sole acquisition from this course—a neatly written note book containing a large number of formulæ dealing chiefly with camphor, menthol and eucalyptol in different proportions in albolene. If the accessory nasal sinuses were ever mentioned during those eight long dreary hours I must have been at the moment otherwise occupied, as I have nothing on paper or in memory to indicate I ever heard of them. Furthermore, if any mention was made of intranasal surgery I was not aware of it, for I graduated without realizing that anything surgical could be done in a nose beyond the snaring of polyps, the sawing off of obtrusive spurs or the trimming or cauterizing of hypertrophied turbinals.

You will nearly all recall the long period during which the spray bottle held potent sway and patients got the "habit" of being frequently sprayed out with solutions of great chromatic diversity, a period of rhinologic endeavor to which more than one cocaine addict could trace his downfall.

MODERN CONCEPTS OF RHINOLOGY

Here is a branch of medicine that has expanded and developed to an amazing degree within our own experience, under our very eyes. To what may we attribute the increased importance of rhinology and how may we account for the altered attitude, the increase in respect, so to speak, of medical thought towards our specialty?

We may, I believe, attribute these changes largely to two factors: (1) The acceptance and elaboration of theories of focal infection, which hold that any pus-producing area must be looked upon as a threat against the health of all other tissues of the organism, no matter how far distant; that many types of inflammation can be attributed to the presence of pus somewhere in the system, and that consequently every possible pus-harboring locale must be eradicated. No recess more intricate or more ideally adapted for the production, storage and concealment of pus could be conceived than our intranasal and accessory structures. That the sinuses served as "reservoirs of peccant humors" was known two centuries ago, though it was not then suspected how very "peccant" these "humors" could be.

The list of diseases now admitted to be attributable to infective foci in the nose is indeed an extensive one, arthritis, nephritis, endocarditis, bronchitis and pneumonia, ophthalmic and orbital lesions, skin lesions, gastrointestinal lesions, diseases of the ductless glands, etc. This is surely a heavy weight to place upon the shoulders of our former modest and unassuming specialty. Indeed the modern internist finds himself all but helpless in the face of many conditions where no evidence of pus foci can be established.

American views on focal infection are perhaps extreme, but at any rate we go much farther than our British and European conferes are willing to follow. We may in time be forced to beat a partial retreat, for at present the pendulum is far over, in extreme position.

(2) The second important feature in the recent evolution in rhinology is the development of intranasal surgery to a high plane. Gone are the days of ruthless clipping and cauterizing of turbinals, crushing operations upon irregular septa, sawing off of bony or cartilaginous spurs and indiscriminate snaring of nasal polypi without any attempt to eliminate their source of origin; gone to join the imposing array of multicolored spray bottles.

Intranasal surgery now requires the utmost delicacy and refinement of technic. This advance would not have been possible except for the antecedent elaboration of anesthetics and hemostatics peculiarly adapted to use upon mucous membrane. These, in conjunction with the use of narcotics in proper proportions for preoperative hypodermic administration, have made possible painless and bloodless procedures of great complexity and thoroughness. Local anesthetics make possible as well the semirecumbent posture of the patient, which in turn gives him greater comfort and frees him of the sense of helplessness he has when lying prone. Furthermore, the semirecumbent or sitting position is one of far greater convenience to the operator in keeping anatomic relations, controlling hemorrhage and permitting the patient both to swallow and to control the accumulation of mucus by clearing his throat.

In my opinion the highest degree of judgment and operative skill is demanded of the intranasal surgeon. He is working by reflected light, in a dark field from one to three inches beyond the surface. This necessitates grasping his instruments at some distance from their working ends and manipulating them wholly by the digital muscles. The field is frequently obscured by hemorrhage. A further element of difficulty is often overlooked. It is upon binocular vision that our estimation of distance depends and we do not have the advantage of binocular vision when operating far in a nose. It is only by continued experience that a single eye gains this power of nicely gauging distance. This applies of course as well to bronchoscopic, ophthalmoscopic and cytoscopic work.

Prior to the present era intranasal surgery had for its sole object the improvement of nasal respiration. Today, while not neglecting this much desired end we strive for additional objects, (1) replacement of all structures in as nearly normal relationship as possible, (2) reestablishment of ventilation of sinus and middle ear cavities and (3) drainage of infected and suppurating areas.

We view the upper respiratory tract as a series of chambers possessing a continuous mucosa, which like wall-paper covering a succession of rooms, lines the surfaces of pharynx, nares, eustachian tubes, middle ear and accessory sinuses, and leads to esophagus and larynx. Hyperemia, edema or inflammation seldom remains a local phenomenon at the point of origin, but spreads to adjacent membranes. Hence the possibility or even probability of a pansinusitis developing from any inflammation in the region.

The newer rhinology looks upon the series of honey-comb caverns of the head as reservoirs, harmless as long as the lining mucosa is normal. Indeed these cavities took excellent care of themselves and remained innocuous so long as we were content to walk about on all fours. Their ducts permit complete drainage when the head is in a dependent position. Unfortunately for the health of the human race the day we reared up and walked on our hind legs we threw out of alignment the natural drainage-course, and thus encouraged the retention of secretions within the cavities. These secretions soon becoming infectious, we proceeded to scatter them about within and without by our humanly acquired habits of coughing and nose-blowing.

Thus a potential reservoir of infection is constantly carried about at the highest point of the respiratory and digestive tracts. All drainage is downwards, both in the daytime and at night, and there is constant danger of contaminating structures that communicate from below.

In this regard the antrum of Highmore is, in my opinion, of supreme importance, both because of its relatively great capacity and its large natural opening, but particularly by reason of the fact that its duct is located at the highest point on its mesial wall. For this reason the cavity must fill completely before it can begin to drain off and even then, as long as the head is upright, it is only the upper-most level of fluid that drains away.

The trend of the newer rhinology is, I believe, to point an accusing finger towards the antrum as the great infecting area of the nose, and to treat the ethmoids with greater leniency, sparing them whenever possible from our former vicious, radical attacks. We have all noticed that upon clearing up a maxillary empyema a coexistent ethmoiditis has been cured as well. Hirsch, of the Hajek Clinic, regarded now as a high authority on the accessory sinuses, states that 90 per cent of the infected ethmoids will take care of themselves when once the antra have been cured.

THE PRESENT AND FUTURE STATUS OF RHINOLOGY AS A SPECIALTY

The increased importance of rhinology has come about not so much by reason of expansion from within and a growing sense of its own greatness, as through pressure from without. Rhinology has had to move rapidly to keep pace with the advances of medicine and the demands made upon it in connection with modern views. Its responsibilities have been multiplied many fold. As always, increased knowledge brings increased responsibilities. With this enlarged importance comes the necessity for higher requirements in the training of its specialists. Gone is the six-weeks course specialist, fortunately for the well being of humanity.

The formation of our examining boards in ophthalmology and in oto-laryngology has been a great step forward in organizing, unifying and establishing these specialties. It is greatly to the credit of the men practicing these branches that they have flocked so loyally to the support of the movement and have offered themselves for examination. The number of men from this region of the west already applying for examination and certification at the recent meeting of the boards of examiners has been a source of surprise to the members of the boards and of pride and satisfaction to all. It is important that gradually the medical profession and public be informed of these demands that we are making upon ourselves in the interest of improving the character of our own work.

Other branches of medicine must follow in defining minimum requirements for those who wish to pose as their specialists. Representatives of national societies must take steps towards formulating their requirements. The state must in time take cognizance of these self-imposed requirements and take them into consideration in licensing practitioners. That is to say, the growing field of medicine will soon make it necessary for the state to demand (1) general requirements, i.e., basic training in all medical subjects and (2) special requirements for those representing themselves as specialists. This standardization will come about slowly, by induction rather than coercion, and with the strong support of public opinion that will demand it.

In the future the opinions of only qualified certificated consultants will be valued and requested by general practitioners. State Industrial Accident Commissions will be compelled to require that the most capable men available shall be employed in special classes of cases.

CONCLUSION

In conclusion, then, rhinology has come into its own. Regarded for centuries as an adjunct to medicine, a minor and unimportant branch, it has within a comparatively very few years risen to a place of prime importance. The anatomy of the parts was well understood at an early date and much of its pathology was well described, but the tremendous importance of this nasal pathology was not even guessed at until the development of modern ideas of focal infection.

Step by step, too, have been developed the refinements of intranasal surgery, made necessary by the importance of eliminating all pus-producing cells and cavities in this region. The completeness and the ease with which this specialized surgery is accomplished have resulted in turn from the development of effective intranasal anesthetics and hemostatics without which formerly only the crudest maneuvers were possible.

All this is a far cry from the era of snuff-taking and the administration of so called "errhines," the purpose of which was forceful cleaning of nasal passages by inducing sneezing. Finally, rhinologists may well glow with pride in the fact that both the improvement in technic in nasal surgery and the inspiration for increased requirements for specializing in rhinology have come from within the bounds of the specialty itself.

Pregnancy and Neurosyphilis. The incidence of central nervous system invasion in 181 cases of early syphilis in males and females, reviewed by George H. Belote, Ann Arbor, Mich. (Journal A. M. A., July 23, 1927), was 20.9 per cent. Among 775 cases of late syphilis it was 40 per cent. The incidence of central nervous system invasion in early cases was practically identical in males and females; in late syphilis, the males predominated. The total incidence of cerebrospinal disease in this group was 42.2 per cent for the men and 37.6 per cent for the women. Carrying the analysis further in the female group to determine the influence of pregnancy on invasion and involvement of the central nervous system, it is found that of the eighty-five women included in the early group, forty-four had been pregnant and forty-one had never been pregnant. Of the parous women 27.3 per cent showed invasion, as compared with only 14.6 per cent who had never been pregnant. Thus, in the early group a much larger percentage of parous women showed invasion than occurred in the nulliparous cases. In the late group, 111 out of 290 cases, or 38.3 per cent of the parous group, showed cerebrospinal involvement, as against thirty-nine in 106, or 36.7 per cent in the nulliparous group. A comparison of total pregnancies of patients with and without neurosyphilis has been possible in this series, and seems to shed an interesting light on the question of protection afforded by repeated gravidity. Of 150 neurosyphilitic women there was a total of 370 pregnancies as against 578 pregnancies in 246 syphilitic women without cerebrospinal involvement.

THE TREATMENT OF SYPHILIS *

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To discuss completely in one paper the treatment of syphilis is almost an impossibility. At least it is impossible to mention all the different stages of this disease, the treatment of neurosyphilis, of syphilis of internal organs, etc. There is no other condition which is as changeable and there is nothing in the human system which cannot be affected by syphilis. It is only natural that syphilis, when it attacks the skin, requires a different treatment than, e.g., when it attacks the eye. However, there are certain principles in treatment which have to be observed, and no matter how much one might vary in the methods of therapy, these principles should never be neglected.

Anyone who wants to treat syphilis scientifically must know the principles of modern syphilitic research. Before the time of salvarsan and experimental work, it was the common belief that after being cured of syphilis, persons were then immune against a new infection. It could be observed that syphilitics never acquire syphilis again. Later research, however, has shown that this was not due to a real immunity but that the individuals were still infected. The fact that the spyhilitic virus in luetics under normal conditions does not take hold, proves that the syphilitic has acquired a relative immunity only. An absolute immunity in this disease does not exist, as any human being in any race is suceptible to syphilis. Also, from many other observations we know that in the system of a syphilitic certain changes take place which we have to regard as symptoms of immunity.

The skin of a syphilitic during the disease is not susceptible to the syphilitic virus. The annular grouping of the recidive symptoms can also be explained by immunity only. Recidives, as a rule, do not develop from spreading through the blood circulation, but only by increased virulence of the spirochete or decreased local immunity on a place where the virus has been deposited during the first infection. The entire biology and pathology of syphilis can be determined by the fact that there is a certain relationship between the virulence of the spirochete and local immunity. If the immunity is stronger, either cure or latency of the syphilitic process will result. When the immunity decreases or the virulence of the spirochete increases, a local recidive will be the result. The virus, therefore, according to its tendency, expands on the periphery of the former roseola and now we have the typical annular ring form of a recurrent rash. Furthermore, from the fact that the liquor, which is so difficult to alter by treatment, does turn to normal once in a while without treatment, and the fact that syphilitic women give birth to dead fetuses and encounter miscarriages and later at the proper time give birth to syphilitic infants, show us that the human organism is able to weaken an infection and even overcome it once in a while. This, I think, we should not forget in our treatment of syphilis.

On account of the reasons just mentioned, we should advise our patients to stay out in the open as much as possible. They should take air and sun baths and avoid excessive use of alcohol and nicotine. Psychical excitement, physical and mental strain should be avoided. The newer treatment with fever producing drugs, which first was advised for the treatment of general paresis, I believe, acts in a similar manner. As a rule, the patient can continue work while under treatment. As important as those procedures might be, we must not think too much of them. The main thing is the medical treatment, for only by this will a good result be guaranteed.

There is no doubt that mercury has a specific action on the symptoms of syphilis at all stages. Nevertheless, contrary to salvarsan, mercury is unable to prevent eruptions of the secondary stage and a positive Wassermann reaction. Symptoms of the secondary stage disappear promptly under mercury. However, there are very often recurrences on the skin, especially on the mucous membrane. Mercury kills spirochetes very slowly and not very thoroughly. The action of the mercury, therefore, is not considered as a spirochetecidal one, but it acts in an indirect way by irritating the cells. Mercury is used in different ways internally. For the most part, I use biiodide of mercury, 0.002 gm. three to four times a day.

Much more popular is the inunction course. The main advantages are painlessness, the quick and strong reaction, and the possibility of discontinuing the use as soon as toxic symptoms appear. Another advantage is the local action on syphilitic symptoms, as very frequently recurrences start from foci of spirochetes which have not been killed. The disadvantage of this method is that it soils the clothes and requires a certain skill to carry out the inunction. It has not been decided yet whether the effect of the inunction is through the skin or is

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due to inhalation. Both routes are probably effective.

When I advise patients to carry out inunction, I have to tell them exactly how to do it. On the first day the mercury should be rubbed into the skin on the right leg, on the second day the left leg, third day right arm and shoulder, fourth day left arm and shoulder, fifth day chest and sides, sixth day back. On the seventh day, I order a warm bath and advise the patient to remove all the ointment. On arms and legs the ointment should be rubbed into the skin on the inner side, where the skin is thinner and able to take up more of it. We usually prescribe ointment with 33 per cent mercury, known as the blue ointment. The amount used at each application varies from 0.5 gm. for a baby to 5 gm. for an adult. Many different ointments have been brought out by different pharmaceutical houses. They are all good. Their only advantage is that they contain a special base or are made up in cubes for each application. Their disadvantage is that they are more expensive. For a full course of treatment thirty to forty inunctions are necessary. During the course a light diet should be advised and the bowels kept open. If the temperature should rise, if diarrhea should start, if we find toxic symtoms on the skin, or the development of a folliculitis, treatment should be discontinued. Contraindicated are inunctions in certain extensive skin diseases as eczema, psoriasis and lichen ruber.

In later years treatment with mercury by injections has taken the place of inunctions. This treatment is clean and the dosage can be regulated very properly. We inject mercury in soluble and nonsoluble forms. The soluble injections have the advantage of very little pain. The disadvantage is that action does not last over as long a period of time, as it is absorbed and eliminated very rapidly. Therefore, if one wants to make the treatment very effective, one should never use soluble mercury, but the insoluble form only. However, it is advisable to use soluble mercury in weak and sickly patients and in patients with nephritis, when we do not know how they will respond to mercury. The injections are usually made intramuscularly. I use bichloride, mercury cyanide, and mercury oxycyanide. The soluble form can also be injected intravenously. Mercury cyanate, mercurosal, and mercurophen are the most commonly used preparations.

With insoluble injections of mercury, we accomplish a more intensive and effective action than with soluble injections. In this form we introduce at each injection ten times as much mercury as by the use of the soluble preparation. The mercury is absorbed very slowly so that the system is under its action permanently. Injections are made intramuscularly from about four to seven days apart. In carrying out these intramusclar injections, before we inject the mercury we should always remove the syringe of the needle and see that no blood comes out. An embolus in the lungs or in the smaller arterial blood vessels which surround the place of injection is a very disagreeable accident.

Mercury salicylate, which contains about 54 per cent mercury, is the most used preparation. It is given in a 10 per cent emulsion. Approximately ten injections of one cubic centimeter of this emulsion will be enough for one course. Another mercury preparation is the bichloride of mercury which is more painful when injected. The most powerful mercury salt is calomel with 98 per cent mercury. It, too, is given in a 10 per cent solution. It is more effective but the injections are very painful. Gray oil is almost as effective as calomel. However, its absorption is not a contant one, so that it may prove toxic and dangerous.

There are patients in whom injections of mercury make deep infiltrations. Consequently in these the injections should be discontinued and replaced by inunctions.

Mercury is relatively harmless when it is used correctly. The many chronic mercury poisoning cases we heard of years ago did not exist. They were mostly symptoms of late syphilis. Mercury, however, can cause several different forms of poisoning which by proper care and early recognition, can either be prevented or reduced. Stomatitis mercurialis is the most common complication. This occurs quite regularly when the patient using the mercury inunction neglects proper care of the teeth.

Those terrible cases of stomatitis with loss of all teeth and necrosis of the bony part of the jaws are not found any more since hygienic conditions of the mouth have been improved so much in late years. To prevent a stomatitis, it is necessary to have the patient examined by a dentist who will take care of all abscesses and cavities. The patient should clean his teeth three times a day and use an astringent and disinfectant mouth wash. Peroxide in about 3 per cent solution and aluminum acetate are very effective.

In cases where stomatitis with painful swelling of the gums, ulceration of the soft parts of the palate and tongue, and swelling of the submaxillary glands occurs, the mouth should be treated with a 5 to 10 per cent solution of chromic acid once or twice a day. One should never allow the patient to carry out this treatment himself, as swallowing of this solution may cause vomiting and other symtoms of poisoning by chromic acid. Following the application of chromic acid, a 5 to 10 per cent solution of silver nitrate in alcohol should be applied. The patient should use frequent mouth wash with peroxide or tincture myrrhae. In very bad ulcerated cases it is advisable to put a strip of iodoform gauze between gum and cheek. Mercury, of course, has to be discontinued immediately, while salvarsan can be given, as it has a very healing effect, and kills those saprophytic spirochetes which are very numerous in ulcerations.

Quite frequent symptoms of an acute mercury intoxication are enteritis and mercury dysentery, with bloody stools. In the course of treatment with mercury inunctions enteritis may occur as a light symptom of intoxication which is usually followed by more severe symtoms and for that reason should not be passed on. In the beginning of a course with soluble mercury inunctions this enteritis is violent in character but is not very dangerous. The treatment consists of enemas, castor oil and opiates. The most dangerous type of irritation of the intestines is that which follows the treatment with oleum cinerum. Here the discontinuance of the action of the mercury deposited in the muscle cannot be stopped. Irritation of the kidneys is quite frequent but of no importance. Hyalin casts are very often found. Albuminuria is more rare and has to be considered seriously if the albumin increases in amount. In such cases treatment must be discontinued. Of course, one has to be sure that the albumin is due to the mercury and not of syphilitic origin. When it is of syphilitic origin, mercury is the treatment of choice. The most important symptom of mercury poisoning is mercury dermatitis. There are patients who show a dermatitis from even a trace of mercury. Those eruptions usually disappear quickly and once in a while mercury can be continued without further trouble. Usually, however, an idiosyncrasy remains and any application of mercury will produce a new dermatitis. In some cases this dermatitis is of malign character, spreads gradually and leads to universal erythrodermia with loss of hair and nails, severe itching, strong peeling, and very often kills the patient.

Iodine and its compounds are more effective than all other specific remedies when we have to deal with syphilitic symptoms of the inner organs. In ulcerous eruptions of the skin and mucous membrane, iodine is also much more effective than mercury. In cases of alarming severity, we start immediately with large doses, such as 3 grams of potassium iodide every day, increasing to about 10 grams or even more. Once in a while, however, very small doses are sufficient. As a rule it is advisable to begin with very small doses, as the iodine sometimes causes alarming symptoms of irritation of the mucous membrane as well as of the cranial nerves. Symptoms of iodism are catarrh of the nasal mucous membrane, swelling of the conjunctiva of the eyelids, headache and dizziness. On the skin we observe the so-called iodine acne, folliculitis, and if the idiosyncrasy for iodine is very severe, we find the iododerma tuberosum. This symptom is easily mistaken for tertiary syphilis. When iodine is given, it should be administered in plenty of milk or mineral water before meals. If irritation of the mucous membrane occurs, one should give a level teaspoonful of sodium bicarbonate three times a day or 3 grams of antipyrin. Under this treatment the symptoms usually disappear in about a week.

Potassium iodide should never be given simultaneously with calomel. On an external lesion such as a chancre or a lesion of the eye, calomel should not be given in connection with iodine on account of the danger of a local caustic effect. There are many different iodine preparations on the market. Their effect depends on their content of iodine. Several organic iodine preparations have been prepared lately, organidin, for instance, which has the great advantage of not being as dangerous where toxic symptoms are concerned. Intravenous injections have been used to a considerable extent. They are very effective, but more dangerous when the patient shows an idiosyncrasy to iodine. Potassium and sodium can also be given per rectum. For children one gram and for adults three grams in 20 c.c. of water.

The most effective treatment of syphilis is accomplished by salvarsan, which was first introduced by Ehrlich eighteen years ago. It has many followers and many opponents. It has its good and its bad features. However, the great majority of physicians are now convinced that in salvarsan we have a drug far superior to mercury and iodine when it is used in early syphilis. There are different varieties of salvarsan. Old salvarsan, which is very effective, neosalvarsan, sodium salvarsan, silver-salvarsan, neo-silver-salvarsan, and sulfsalvarsan. They are all good when used properly and intelligently.

Salvarsan, including sulfsalvarsan, should be given intravenously. Intramuscular injections should be given only when it is absolutely impossible to find a suitable vein. This is extremely rare, except in very small babies. I have never yet given an intramuscular injection in an adult, but I have seen a number of cases with bad abscesses and infiltrations in the buttocks, due to intramuscular injections.

While the patient is under treatment, he should avoid excessive eating, drinking and smoking, and should take good care of himself in general. Before each injection, the urine should be examined for albumin. Fever, colds and angina are absolute contraindications for salvarsan. Albumin and a distinct red color of the urine should be watched for very closely.

If a paravenous injection has been accidentally made, one should apply first hot and later cold wet applications. An injection of sodium thiosulphate in and around the infiltrated tissue is supposed to relieve the pain immediately and neutralize the effect of the salvarsan in the tissue. The same can be accomplished by injections of normal salt solution.

There are several complications which may follow an injection of salvarsan. High temperature several hours after the first injection in primary or secondary syphilis is due to the destruction of millions of spirochetes. This fever is usually followed by a swelling of the primary lesion or increased distinctiveness of the secondary rash. It is the so-called Herxheimer reaction.

The nitritoid crisis is another complication which quite frequently follows an injection of salvarsan. Redness and swelling in the face and mouth, swelling of the tongue and lips and accelerated heart beating are the symptoms. Once in a while, we find a generalized urticaria. The dyspnea, when present, passes away in about ten minutes to half an hour. It is usually harmless but occasionally of quite serious character. This condition is found in some patients after each injection, especially if one inject very quickly. To accustom a patient to salvarsan injections, one should start in with very small doses or should change from one variety of salvarsan to another. The attack can be checked by a subcutaneous injection of one c.c. of adrenalin.

Several days after the injection of salvarsan, a toxic dermatitis may develop. Very often as a forerunner of this serious complication, we find itching of the skin and a slight erythema. These symptoms are of the greatest importance and we should remember that a fatal dermatitis can almost always be avoided. Further injections of salvarsan have to be discontinued immediately. Any eruption on the skin during the treatment should be watched very carefully and correctly diagnosed to avoid serious accident. If death from toxic dermatitis occurs, it is, as a rule, blamed on the salvarsan and idiosyncrasy of the patient. That is one reason why the opponents of salvarsan are so successful in carrying on their campaign against this drug. In reality, it is usually due to the physician's carelessness in not watching the patient closely enough. Toxic dermatitis should be treated according to dermatologic principles. Some authorities claim that sodium thiosulphate injected intravenously, beginning with 0.3 gm. and increasing to 1.0 gm. every day, is very helpful. Personally, I think it is of value when the dermatitis is in the very earliest stage, but in advanced cases I have not seen satisfactory results from its use. Thiosulphate injections, however, should be administered in every case of toxic dermatitis from salvarsan as well as from mercury and bismuth, as it is the only specific treatment we have at the present time.

Fixed salvarsan eruptions are urticaria-like dermatoses which always recur on the same spot after each injection. However, they are not serious. Icterus is another complication encountered. We find urobilinogen frequently during the course of treatment, but only when it exists in considerable amounts do we consider it a symptom of an oncoming icterus. Early icterus may appear during treatment. It may resemble catarrhalic icterus, inasmuch as it is devoid of intestinal symptoms. This form of icterus usually disappears shortly. Treatment, however, should be interrupted as yellow atrophy may result if it is continued. Icterus may also be a syphilitic symptom.

Late icterus begins usually from two to three months after the course of treatment has been finished. It, too, as a rule is harmless. However, further treatment with salvarsan should not be given until the patient has entirely recovered. It is very often difficult to differentiate toxic icterus from a syphilitic icterus which responds very favorably to antisyphilitic treatment. The most dangerous accident following salvarsan treatment is encephalitis hemorrhagica. It usually appears after the second injection. On the second to fourth day after the injection, the patient becomes restless, excitable, forgetful and acts queerly. Several hours later he is seized with convulsions and symptoms of very severe headache. Death is the usual outcome of this condition. Some patients recover but they usually show subsequently nervous disturbances as spastic paralysis and neuritis. We do not know as yet, whether this hemorrhage in the brain is due to the salvarsan or whether it is a peculiar Herxheimer reaction.

Spastic paralysis has been observed several times following intraspinal injections of salvarsan. It is probably due to a flaring up of latent meningomyelitis syphilitica. Often we find paralysis of the bladder with persistent retention of the urine. These cases sometimes end favorably. Recovery, when it occurs, is very slow.

Lately, several preparations of other metals have been introduced in the treatment of syphilis, particularly bismuth, which was first used by the French. The effect of bismuth is very great; it ranks between salvarsan and mercury. It is injected intramuscularly like mercury. Bismuth tartrate seems to be the most popular form at the present time. Some manufacturers combine it with butyn to diminish the pain which follows an injection. Each injection should contain about 0.002 gram of bismuth. Ten to twelve injections constitute one course. Injections of bismuth should not be given as frequently as mercury because the absorption of bismuth is very slow. Bismuth can give the same complications as mercury — stomatitis, dermatitis, etc. A typical symptom of bismuth poisoning is a small bluish bismuth line on the gum.

The intraspinal treatment which was first given by Marinesco, Wechselman, Swift and Ellis, is, at the present time, not as much in favor as it was several years ago. The purpose of this treatment was to bring the salvarsan directly into the spinal fluid, as it was the opinion of many that salvarsan injected into the blood did not reach the spinal fluid for anatomic reasons. Intraspinal treatment was administered mainly in cases of latent and neurosyphilis. However, we have learned that its effect is not great enough to justify its use, and that it is by no means harmless. Intraspinal treatment is of distinct value in early secondary syphilis, when we find an involvement of the spinal fluid.

I will now describe very briefly how to apply the above methods in the different stages of syphilis. The most important is the treatment of primary seronegative syphilis. The syphilitic virus is a distinct lymph vessel and connective tissue parasite. From the primary lesion it gets into the smallest lypmh vessels and lymph glands. From our studies on experimental syphilis, we know that at that time spirochetes can be found in the blood and in the spinal fluid. For that reason, syphilis in this stage cannot be called a localized disease. In the majority of these cases we are able to prevent the eruption of secondary symptoms and to keep the Wassermann reaction negative. At this stage a blood test should be made after each injection of salvarsan, as we often find during the course of treatment that the Wassermann becomes positive if only for a short time. An abortive treatment cannot be expected in these cases. We have to call them either primary syphilis with positive reaction or secondary syphilis. In cases of primary syphilis and negative reaction, one strong course of treatment will sometimes be sufficient to cure the patient. However, once in a while, one of these patients shows symtoms of secondary syphilis later on. It is in practice not advisable to take the chances of a one course abortive treatment. A second or even a third course should be given.

In primary syphilis, at least when the primary lesion is very indurated, the chancre should be excised or destroyed by cautery, as we know spirochetes can remain alive in primary lesions for many years. If for some reason or other the removal of the primary lesion should be impossible, a 20 per cent calomel ointment or calomel in the form of powder should be applied.

Years ago, and even at the present time, some physicians have delayed treatment until a secondary eruption has appeared, believing that the natural formation of the antibodies in the system should not be disturbed by the treatment. According to our present standing of knowledge it is considered a mistake to do this. In almost all cases with salvarsan treatment, we are able to prevent the eruption of secondary symptoms and to prevent the blood from turning to the positive stage. To treat syphilis in its primary stage is of greatest importance for the patient as well as for the public which is endangered mostly by patients with secondary symptoms.

One course of neosalvarsan, for instance, should consist of at least ten injections, which would mean about six to eight grams. In women or patients in poor health, the doses should be decreased accordingly. As initial dose 0.2 gm. or 0.3 gm. should be given, three days later 0.45 gm., and three days after that 0.6 gm. Then at weekly intervals 0.6 gm. until the required doses have been given. Some give larger doses at the beginning and continue treatment later in amounts of 0.9 gm. It is permissible to do this when one can watch the patient very closely to detect the very first symtoms of arsenic poisoning. In ambulant practice, however, in my opoinion, it is not very safe to give such large doses.

In the primary stage of syphilis, treatment with mercury is not absolutely necessary. We want quick action and are trying to kill the spirochetes as quickly as possible. This can be accomplished only by salvarsan. The blood should be tested during the course of treatment to see if it stays negative all the time. Even when the action becomes slight, further treatment is needed. In all cases of primary syphilis, however, at least two full courses should be given.

We know that the primary lesion in the very beginning cannot be considered a localized disease as the virus has already entered the blood stream. From the blood stream, the spirochetes reach the tissue and settle there permanently. During this time the Wassermann reaction turns to positive. We do not know how the syphilis has attacked the internal organs, but we do know that the virus does not produce any secondary symtoms on the skin. However, it is the safest plan to treat syphilis in the stage of the primary lesion with positive Wassermann reaction like secondary syphilis.

Most important is the infection of the central nervous system and of the meninges at this time, conditions which can be recognized from the pathologic changes in the spinal fluid. In the majority of these cases, infection of the central nervous system has taken place already. In treating these cases we aim to prevent the spirochetes from settling in the tissues. It is surprising to see how often we are able to clear up the spinal fluid in cases of primary lesion with positive Wassermann reaction.

The closer we come to the secondary stage, however, the poorer is the outlook for complete sterilization of the spinal fluid. We are quite sure at the present time that with sufficient treatment in the second stage of syphilis, the positive reaction in the blood can be changed to negative, but the infection of the meninges will go on if we are unable to sterilize the spinal fluid at the very beginning. Insufficient specific treatment aggravates the infection of the meninges. To destroy spirochetes in the meninges is much more difficult than to destroy them in the blood. For this reason we find most cases of recurrence developing from infected meninges. In this way the neurorecidive usually develops. In practice it is impossible to perform a spinal puncture in every patient. However, it is unnecessary to do so when we consider that the majority of all secondary cases show more or less changes in the spinal fluid, and we simply treat every case as if the spinal fluid were affected.

Slight changes of the liquor, consisting of albumin and slight increase of lymphocytes, quite frequently clear up alone. This, however, is an exception, and where treatment is concerned we should not allow ourselves to take any chances on it. Two to two and one-half years after the infection, the condition of the spinal fluid is as a rule decided and if there are pathologic changes in the spinal fluid, they are usually at the time fully developed. Albumin and lymphocytes are not constant. Wassermann and goldsol reactions, however, are almost always positive and do not change. There is no doubt that only the patients with diseased liquor are future candidates for tabes and general paresis. We know that in the secondary stage, the correct treatment can sterilize the pathologic liquor and for that reason we should carry out a treatment which does not result in a provocation but rather a destruction of the spirochetes in the meninges.

Half a year after the last course, the spinal fluid should be examined and if we find it negative, it probably will remain so. If there should still be some pathologic changes, we should continue treatment and try to remove them. This is possible in some cases. Wherever we are unable to bring the liquor back to normal, we should try at least to get the lymphocytes and the albumin to within normal limits. This is a difficult and unsettled problem at the present time. There are cases of locomotor-ataxia without pathologic liquor, and cases of pathologic liquor which are clinically healthy for many years. Negative liquor, therefore, does not always mean that the patient is cured and positive liquor does not always say that some day the patient will show the clinical picture of syphilis of the central nervous system.

How should one treat syphilis in order to cure the diseased liquor after the first two years? How should one treat it in order to prevent a provocation of a meningorecidive?

Salvarsan in strong doses brings about a local so-called Herxheimer reaction. In order to prevent a reaction or irritation, especially of the nerves, it will be necessary to begin with several mercury injections or with small doses of salvarsan, perhaps combined with potassium iodide. Our aim is to sterilize the organism as a whole, otherwise we are always in danger of getting a monorecidive of the meninges.

We have to give the patient from six to eight grams of salvarsan or about three to four grams of silver-salvarsan. At the same time mercury preparations will be necessary. In place of mercury, bismuth may be used. A scheme for the treatment would be about as follows: First day, mercury salicylate 0.05 gm.; fourth day 0.06 gm.; eighth day 0.08 gm.; thirteenth day neosalvarsan 0.3 gm.; sixteenth day mercury salicylate 0.08 gm.; seventeenth day neosalvarsan 0.45 gm. and so on. Although in our experience, especially in primary syphilis with positive Wasserman reaction, the majority of the Wassermann reactions turn negative without showing other secondary symptoms, we consider it necessary to continue treatment of these cases and to give three to four combined courses at short intervals. The interval between the first and second course should not be more than six weeks. Later on it can be extended to from three to four months. After the fourth course a spinal puncture should be performed and the treatment continued only when we find pathologic changes. If the liquor is normal, we can dare to discontinue therapy. The patient should return for an examination and blood test three to four times a year. Three years negative findings we consider sufficient to pronounce the patient cured.

The treatment of late secondary syphilis or lues latens is essentially the same as the treatment of the secondary stage. However, we have to consider that it is sometimes very difficult to get a negative Wassermann reaction. The courses must be very intensive and should be given frequently. We should, however, not submit the patient to an indefinite treatment as there are some cases in which the Wassermann never will be negative.

Wassermann-fast cases are those in which the Wassermann does not change in spite of all treatment. In those cases it is advisable to combine the antisyphilitic treatment with nonspecific protein treatment. Several injections of nonspecific protein should be given either before or simultaneously with the specific treatment. Very often, under this treatment the Wassermann reaction will become negative. Wassermann-fast cases are sometimes due to improper treatment at the beginning. Too small doses given at too long intervals are generally the cause for this disagreeable condition. Besides Wassermann-fast cases, we have salvarsan, mercury, and bismuth-fast cases. If a patient has been treated with one kind of salvarsan only, we will notice sometimes that it is impossible to change the positive blood reaction. In those cases we should go over to mercury, bismuth or another salvarsan preparation, and quite often we will be able to change the Wassermann reaction. It is well known that sulfsalvarsan, when given in early syphilis, is sometimes the cause for salvarsan-fast cases. We must remember that in early syphilis we want quick action, we want to kill as many spirochetes as possible in as short time as possible. Sulfsalvarsan is slow acting, gives a depot action, and is slowly eliminated.

Syphilitic infection of the internal organs, especially of the brain, liver, and blood vessels, does not contraindicate the use of salvarsan. However, one should start with small doses to avoid severe reactions.

Neurorecidives are isolated syphilitic infections of the cranial nerves as a result of syphilitic meningitis. In those patients it is not difficult to cure the clinical symptoms, and to change the blood Wassermann into negative. The Wassermann reaction in the spinal fluid, however, stays persistently positive.The majority of neurorecidive cases are the result of too little treatment in the beginning. They appear sometimes without any treatment. Prophylaxis of neurorecidive should be our aim in the treatment of syphilis and this is done best by intensive treatment in the secondary stage. The second and third course should follow at short intervals. The best treatment for neurorecidive is salvarsan, when we are sure that the patient will come regularly. Otherwise, mercury inunctions of eight weeks duration, or mercury injections are advisable. The salvarsan courses should be more intensive than in ordinary cases of syphilis.

In tertiary syphilis of the mucous membrane, salvarsan is just as effective as in the secondary stage. Cases which become worse under the treatment of mercury respond very promptly to salvarsan, and salvarsan is always indicated in those cases. In other cases the indication depends on the location of the gumma. If the luetic process is in the skin, salvarsan should be used. A Herxheimer reaction on the skin is never dangerous. It is dangerous, however, when the syphilitic process is located on one of the important internal organs. A single strong salvarsan injection can result in permanent loss of health. Therefore, in all tertiary symptoms, the treatment should begin with mercury or iodine, and after about a fortnight of treatment, one can begin salvarsan injections. Once in a while, however, we have to go over to quick therapeutic measures, as for instance in a case of chorioditis, in which the progress of the disease might result in blindness. In such cases salvarsan can be given, but in very small doses. Begin with 0.05, 0.075, and 0.1 gm. These injections, of course, can be given every other or every third day. In tertiary syphilis treatment with iodine is very effective and, combined with mercury inunctions, will easily heal tertiary lesion. Iodine and mercury cure the symptoms and salvarsan cures the disease, and for this reason we should not fail to give the last one. When giving salvarsan, one has to be careful with old people or patients suffering from diabetes, arteriosclerosis, or high blood pressure. If there is any doubt as to doses of salvarsan the patient will stand, one should begin with small doses and increase gradually. If a case is of long standing, we will not always be able to cure the patient serologically as well as clinically and, therefore, it would be wrong to continue treatment ad infinitum.

There is one form of syphilis which should be given special attention. It is lues maligna which is the most destructive form. In those cases mercury is absolutely contraindicated, as it quite frequently hastens the destruction of tissue. Before we had salvarsan, those patients very often died of their disease, but since we have the salvarsan lues maligna has lost its dangerous character. Silver-salvarsan seems to be particularly effective in these cases.

The most effective treatment of tabes and general paresis has not yet been decided. In tabes there is no doubt that frequent intermittent courses of salvarsan and mercury are effective. Strong salvarsan treatment, particularly with sulfsalvarsan, can stop the progress of tabes and can relieve the patient of gastric crisis. Ataxia can be improved and the bladder symptoms can disappear entirely. Tabetic atrophy of the optic nerve is no longer considered a contraindication to salvarsan. The same treatment is advisable in general paresis. Here, however, mercury should be given in its most powerful form of calomel injections. Tryparsamide, which has been recently introduced in the treatment of tabes and paresis, is probably not as effective as it was expected to be in the beginning. There is no doubt that it is our most powerful arsenical tonic and the clinical symptoms in patients with tabes and paresis show distinct improvement. Tryparsamide is somewhat dangerous to the optic nerve and may lead to blindness. The most effective treatment at the present time seems to be the fever treatment. For this purpose malaria inoculation has proved to be of the greatest value. With malaria treatment, a large percentage of patients with general paresis are able to resume work again. Malaria treatment is given now even in secondary syphilis to prevent an infection of the spinal fluid. This treatment, however, is still in the experimental stage. Similar treatment by injections of nuclein acid, tuberculin and other drugs, has been used in the past. Treatment of syphilis with malaria is a very new and very interesting problem.

The treatment of congenital syphilis is about the same as for acquired syphilis. I use mercury, salvarsan and iodine. In babies, mercury may be given in the form of bichloride bath, one to two grams for one bath. Calomel can be given internally in form of powder, about 0.01 gm. three times a day. Powders of mercury oxydul tannic can be administered in the same way and in the same strength. This treatment, however, cannot be regarded as a perfect one. A course of salvarsan and mercury has to be given, mercury best in form of inunctions about 0.3 gm. blue ointment each time. Neosalvarsan should be given in doses of 5 to 7 mg. per kg. body weight. If it is absolutely impossible to find a vein, neosalvarsan might be given intramuscularly dissolved in about one-half of one c.c. of distilled water. Usually injections can be given intravenously. The veins on the forehead or the jugular veins are very suitable for this purpose. Injections should not be given more frequently than eight days apart. Adequate nourishment for the syphilitic baby is of great importance. Following a combined salvarsan and mercury treatment, iodine can be given. It is necessary to repeat the courses in intervals of four to five months during three to four years, even when all clinical and serologic symptoms disappear soon.

Of great importance for the prophylaxis of syphilis is the treatment of pregnant women. It should begin as early as possible and it is advisable to force the treatment even when the patient does not tolerate it very well.

There are certain principles in the treatment of syphilis which should not be neglected. The problem of treatment of this disease remains an individual one, and as different patients respond differently, one may have to change the treatment at any time. Having learned the principles, the finer points of treatment will be acquired by experience.

CONTOUR OF NORMAL AND TUBERCULOUS CHESTS. S. A. Weisman, Minneapolis (Journal A. M. A., July 23, 1927), summarizes the results of his study of normal and tuberculous chests as follows: The flat chest appears to be the healthy chest. The round or deep chest is probably an infantile undeveloped chest. The round chest is probably more prone to tuberculosis. The vital capacity of the flat chest is more than 50 per cent greater than that of the round tuberculous chest. Early childhood diseases may play an important role in hindering the proper development of the chest. Good environments, such as fresh air, sunshine, proper food and special forms of gymnastics, can help to increase the vital capacity. To quote Hutchinson, "a month of tree climbing may be worth a gallon of tuberculin."

LOCAL ANESTHESIA IN MAJOR SURGERY*

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From the earliest times in the history of surgery, innumerable attempts have been made to render surgical procedures painless, and an endless variety of methods have been devised for this purpose. Ancient surgical literature describes countless methods designed to produce local anesthesia by various drugs, psychic and other methods, but none of them were successful until the use of cocaine was demonstrated by Koller of Vienna in 1884. Practically, therefore, the first successful use of local anesthesia began at this time, only forty-three years ago. It was in 1883, or only one year prior to the discovery of the anesthetic value of cocaine, that Guerin[1] advised the burning of a strip of skin around the field of operation with Vienna paste to produce local anesthesia. This method, advocated but forty-four years ago, seems characteristic of the middle ages. Corning, Halstead, Braun, Matas and Crile were pioneers in the use of local anesthesia, and did much to develop and make its use practical.

The development or evolution of modern surgery has been dependent upon the discovery of the causes and methods of prevention of wound complications, and upon the discoveries of general and local anesthesia. The gradual perfection of these, together with the perfection of operative technic, and also of pre- and postoperative care, are responsible for our present day volume of surgical work. Patients today do not have the horror of the painful operation and its consequences that they always had prior to the present era.

Only a few years ago, surgery was a barbaric procedure and was resorted to only in the most desperate cases. Naturally, these patients suffered a tremendous mortality, and those that survived the operation usually developed complications that rendered their convalescence slow and accompanied by much suffering. Due to these bad results, surgery was looked upon as a procedure of last resort and the hospital as a place to die. It has taken many years to alter these fixed ideas that the laity once had in common, but today the converse is largely true, with the result that surgical lesions are treated early, and the patients enter the hospital with a different conception of both it and the operation. Many patients, however, have a dread of general anesthesia and its aftereffects, and this is one of the factors that has led to continued efforts to perfect safe and efficient methods of producing local anesthesia for major surgical procedures. The efficiency of local anesthesia has been so increased in recent years by perfections in its technical use that at the present time in all cases we should have the question in mind as to whether its use is indicated or whether a general anesthetic is preferable.

Some surgeons are now using local anesthesia in over 80 per cent of their major surgical cases, and in some clinics, combined with nitrous-oxide-oxygen analgesia it is used in all cases. It is readily apparent that some form of local anesthesia is rapidly becoming the method of choice wherever it is at all feasible, and its scope is extending to many surgical procedures that formerly were always undertaken under a general anesthetic. It is the better understanding and knowledge of the technic in the use of local anesthesia that is lending to its increased use. Through habit many surgeons still cling to the use of general anesthesia in all major and many minor surgical procedures. However, many of these surgeons have attempted to use some form of local anesthesia, but have failed in their attempts, due usually to errors in technic, and have subsequently been discouraged in its use.

Cocaine solutions were originally used to produce local anesthesia, but this drug has been supplanted by novocaine which is but one-sixth as toxic. As much as six ounces or occasionally eight ounces of a ½ per cent solution of novocaine may be used without toxic effects. Tutocaine is a recent addition to the list of efficient local anesthetics. It is less toxic than novocaine, and can, therefore, be used in larger quantities with safety. It produces a quicker and more lasting anesthesia than novocaine, but has the disadvantage of producing a marked local hyperemia, which at times causes troublesome oozing. This, however, may be largely overcome by the addition of adrenalin to the solution. Tutocaine is used in 1/4 or 1/5 per cent solution. Adrenalin was discovered in 1901, and was soon found to be a valuable addition to solutions used for local anesthesia. It produces an ischemia which markedly retards the absorption of the anesthetic solution. This results in a marked prolongation of the anesthesia, and also lessens the danger of toxic symptoms. It also increases the intensity of the anesthesia. Usually three drops of a 1 to 1000 solution of adrenalin are added to the ounce of novocaine or tutocaine solution for infiltration anesthesia. In operations for hyperthyroidism it should be omitted altogether, as it markedly aggravates the symptoms of this condition. Also, in operations on the fingers or toes or for circumcision it should be used in extremely dilute solution.

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Sollman has shown that by adding 1/2 per cent sodium bicarbonate to the novocaine-adrenalin solution its efficiency is increased from two to four times. This lessens the need for large quantities of the solution and thus decreases the danger of toxic effects.

Quinine-urea-hydrochloride solution is irritating and produces an edema of the tissues, but it is of value in abdominal surgery to anesthetize the parietal peritoneum. Usually 1/5 to 1/4 per cent solution is used for this purpose, and it produces an anesthesia that lasts several hours. This allows of better retraction of the incision, and prevents postoperative pain. When novocaine only is used to anesthetize the peritoneum, it is rapidly absorbed and the suturing of this structure is very painful unless it is reinfiltrated.

Occasionally mild toxic symptoms develop when large quantities of novocaine solution are used for infiltration anesthesia, but they usually rapidly disappear and cause no trouble. Vertigo, syncope and nausea or vomiting are not unusual, but severe symptoms of collapse or death are uncommon and usually result from the accidental injection of a quantity of the solution into a vein during infiltration. In sacral anesthesia, severe reaction may occur if the solution is accidentally injected into the spinal canal. These reactions usually begin with a decreased pulse rate and a rapid fall of blood pressure accompanied by collapse, dyspnea and anginal pain. These patients may die from sudden asphyxia resulting from paralysis of the respiratory center. Death from novocaine is more likely to result from spinal, paravertebral or posterior splanchnic anesthesia, than from simple infiltration anesthesia.

It has been found that the barbital compounds are almost specific as antidotes for toxic symptoms from novocaine. This is a very important discovery, as it gives us an an added assurance for the safety of its use.

The most simple and commonly used method of producing local anesthesia is by infiltration. When carefully used, it gives a very satisfactory anesthesia. The more complicated methods of regional anesthesia, such as cranial nerve block, paravertebral, splanchnic and sacral anesthesia have their special indications, but they require special training and experience to be technically successful. The paravertebral and posterior splanchnic methods in particular are dangerous.

Local anesthesia by infiltration is the method of choice in operations on the cranium or brain, such as decompression or removal of brain tumors. In these operations the anesthesia is easily obtained and there is an absence of oozing, which is often quite troublesome when ether is used. In operations on the vertebral column, such as laminectomy, infiltration anesthesia is usually indicated.

In operations about the face or mouth, local anesthesia is usually very satisfactory, and these operations are conducted with far less oozing than when ether is used. In operations on the neck, and in particular in thyroidectomy, local anesthesia is superior to general anesthesia. Simple infiltration anesthesia with added injection of the superior poles of the thyroid gland itself is sufficient in these cases. Occasionally some discomfort and difficulty in breathing are complained of when delivering a goiter deeply imbedded around the trachea, and in these cases it is sometimes necessary to give a few inhalations of nitrous oxide-oxygen to free the goiter without discomfort. Local anesthesia in thyroid operations eliminates the danger of recurrent laryngeal nerve injury, and also lessens the incidence of tracheitis or other pulmonary complications. In cases of hyperthyroidism, local anesthesia is especially indicated, and is frequently a life saving measure in these cases.

Nonmalignant tumors of the breast or thoracic wall are easily removed under local anesthesia. In cases of suspected carcinoma of the breast the suspected growth is often removed for frozen section diagnosis. This should always be done under local anesthesia, but when the diagnosis of malignancy is confirmed, a general anesthetic should be given to complete the radical amputation of the breast and axillary contents.

Thoracoplasty operations for collapse of the chest wall should be done in stages under local anesthesia. These cases are usually sufferers of pulmonary tuberculosis or lung abscess. The collapse of the chest wall is necessary when artificial pneumothorax cannot be accomplished on account of thickened pleura or pleural adhesions. General anesthesia is contraindicated in such cases. Rib resections for empyema should always be done under local anesthesia, even in children. It is surprising how well these little patients behave during such an operation, when local anesthesia is used. In these cases the parietal pleura is sometimes very sensitive and requires careful injection to render it completely painless. The visceral pleura, like the visceral peritoneum, is insensitive to pain. In draining a lung abscess by the two stage operation, no infiltration of the visceral pleura or lung is necessary during the second stage. The thoracic wall, of course, is infiltrated up to this step of the operation. The actual cautery may then be used to penetrate the abscess in the lung tissue, and no pain is produced.

In cases of cardiovascular renal disease, in which some surgical complication develops, local anesthesia should be used if at all possible. Pulmonary or renal complications may result, should general anesthesia be used in these cases.

In abdominal surgery, local anesthesia should be used far more frequently than it is. Many surgical procedures involving the abdominal wall, such as all types of herniæ or tumors, should be done under infiltration anesthesia. Within the abdomen, however, local anesthesia has its limitations. It is not well adapted for use in cases of an acute inflammatory nature, or in cases in which extensive intraabdominal manipulations are necessary, such as in exploratory operations, or in cases where dense adhesions are present. On the other hand, there are many indications for the use of local anesthesia in intraabdominal operations. Many of these cases are now routinely being operated on under general anesthesia, with a greatly increased morbidity and mortality for this very reason. In certain cases requiring stomach resection, particularly in greatly debilitated or emaciated individuals suffering from ulcer or operable carcinoma, local anesthesia is of great value. The operation of gastroenterostomy may frequently be done with as much ease and without pain under local as it can be done under general anesthesia. In marantic infants, suffering from hypertrophic stenosis of the pylorus, the Rammstedt operation under local anesthesia is a life saving measure. The infant, in these cases, is strapped to a board so that its arms and legs are kept out of the way during the operation. Simple infiltration of the abdominal wall is usually all that is necessary in these cases to give a perfect anesthesia. The wound is closed with through-and-through silkworm gut sutures after the hypertrophied pyloric muscle has been divided and spread.

In some cases, where extensive operative work is to be done in the upper abdomen under local anesthesia, the addition of anterior splanchnic anesthesia is of value. This, however, requires special skill and training, and even then is not always successful in blocking pain when traction is applied to the omentum, mesentery or mesocolon. The visceral peritoneum is insensitive to pain and does not require infiltration. Intestinal operations, such as enterostomy or resection, are therefore accomplished without pain. The omenta and mesentery, however, must always be well infiltrated, as traction on them produces severe pain. This pain is produced by traction on the sensory nerves involving the posterior parietal peritoneum which is extremely sensitive. Sensory nerve filaments also follow along the vessels in the mesentery, and these must always be blocked by infiltration. Traction on the broad ligaments of the uterus also produces pain. Under general anesthesia, it is this traction on either the mesentery or the broad ligaments that frequently produces the symptoms of shock, the extent of which varies with the extent and duration of the traction. The blocking of these traumatic impulses prevents this complication.

In appendectomy, the mesoappendix should always be well infiltrated before it is handled, and it is also well to circuminject the base of the appendix before it is ligated, as this step of the operation is at times somewhat painful when the structures are acutely inflamed. Local anesthesia is successful in cases of acute appendicitis, when the appendix is nonadherent, but when adhesions are encountered that make the delivery of the appendix difficult, nitrous oxide-oxygen should be given until this step of the operation is completed.

In certain cases of advanced intestinal obstruction, an enterostomy under local anesthesia may possibly tide the patient over a toxic crisis and permit of a more complete operation for the obstruction later on.

In operations upon the gallbladder, local anesthesia is of value in selected cases, especially in cases complicated by diabetes. In fleshy individuals where considerable retraction is necessary on the abdominal wound to give adequate exposure, or in cases where the gallbladder is densely adherent to the surrounding structures, general anesthesia is preferable. The gallbladder itself is insensitive to pain, but traction on it or the ducts and cystic artery is very painful. The exploration of the common duct through the foramen of Winslow is also very painful. The ligature of the cystic duct and artery in cholecystectomy is very painful unless these structures are well infiltrated before ligating and dividing.

The kidney is insensitive to pain, but its capsule and pedicle are very sensitive, and traction on the latter produces much suffering. The delivering of an imbedded kidney therefore usually requires some form of general anesthesia, or it may be accomplished by the use of paravertebral anesthesia.

Operations on the bladder, such as suprapubic cystostomy, are easily done under local anesthesia. General anesthesia is never indicated in these cases. Prostatectomy may be accomplished by the additional use of sacral anesthesia, and the mortality of these cases be considerably lowered by the elimination of general anesthesia. If the sacral block has failed to produce satisfactory anesthesia, nitrous oxide-oxygen should be given in preference to ether. The latter predisposes these patients to postoperative pneumonia or other complications that are infrequent when local anesthesia is used.

Surgical procedures involving the scrotum, such as hydrocele, varicocele and epididymectomy, are easily accomplished under local anesthesia, by circuminjecting the entire scrotum and infiltrating the cord.

Pelvic operations on the female may in selected cases be accomplished under local anesthesia, but when inflammatory processes have caused adhesions matting the structures together, some form of general anesthesia is preferable.

In operations on the extremities, such as amputations, local anesthesia is ideal. The tourniquet used during these operations prevents the novocaine from being absorbed and makes the anesthesia absolute. Large nerve trunks, however, require injection before they are divided. For this purpose a 1 per cent solution of novocaine is used. The bone is rendered anesthetic by infiltrating the structures adjacent to the periosteum. Amputations for senile or diabetic gangrene should always be done with this form of anesthesia.

Local anesthesia cannot be used succcessfully when the technic of the surgeon is rough. Some operators are not temperamentally suited for this form of anesthesia, and their efforts in its use are usually unsuccessful. There are also some hypersensitive patients who seriously object to the use of local anesthesia, and usually, in these cases, should no contraindication to general anesthesia be present, this method is preferable.

Local anesthesia should not be used in cases where extensive abdominal exploration is necessary, or in operative procedures requiring a considerable length of time for their completion. Usually the duration of complete local anesthesia is from thirty to forty-five minutes, and in cases lasting longer than this time, reinfiltration is usually necessary to complete the operation without producing pain.

The only additional equipment necessary for work under local anesthesia is a 10 c.c. Luer or Gentile syringe with a lock connection between the syringe and needle. The other instruments used are those ordinarily employed in any operative procedure. Special injectors or infiltration apparatus are never required. Very fine needles should be used for the infiltration of the skin and peritoneum, and larger needles from five to twelve centimeters in length are necessary for deep infiltration.

The preparation of the patient for operation under local anesthesia is important. Every attempt should be made to relieve his mind of fear or apprehension, but he should be informed that the operation is to be a matter of intelligent cooperation. The usual preoperative preparation is given, and nervous individuals are given veronal (grs. 7½) or luminal (grs. 1½) the night before the operation. On the morning of the operation the patient is given a hypodermic of morphine (gr. ¼) and atropine (gr. 1/150) one hour before beginning the operation. If this fails to have the required effect an additional hypodermic of morphine (gr. 1/6) may be given twenty minutes before he is taken to the operating room. It is essential that a tactful psychoanesthetist be with the patient constantly during the operation. It is the duty of this assistant to attend to his minor wants and to engage him in conversation. The patient should not see any of the preoperative preparations and the instruments should be excluded from his range of vision. The skill of the psychoanesthetist markedly increases the efficiency of the entire procedure. It is not necessary to have the operating room quiet, but the noise made by handling of instruments should be carefully avoided.

After the operative field has been prepared as, for example, in a proposed laparotomy, the skin at the lower end of the proposed incision is carefully grasped and compressed between the thumb and forefinger. This partially numbs the skin so that the introduction of the fine needle to produce the initial wheal is made painless. The production of pain at the beginning of the operation should be carefully avoided. This gives the patient confidence to start with. The entire skin along the line of the proposed incision is then carefully raised into wheals by repeated injections with the same fine needle. Subcutaneous infiltration anesthetizes the skin but for a short time, while the anesthesia resulting from the intradermal injection persists for nearly an hour. This point is of importance when it comes to the suturing of the wound at the close of the operation.

After carefully infiltrating the skin, the subcutaneous tissues are next infiltrated. The longer needles are used here, and the tissues are well infiltrated around the entire proposed wound. It is of importance here to keep the needle constantly moving while injecting the anesthetic, as otherwise an intravenous injection may be accidentally given, should the lumen of a vein be entered. After the subcutaneous infiltration has been completed, pressure is applied over the injected area to diffuse the solution through the tissues, and usually eight to ten minutes elapse to allow the anesthesia to become complete. The incision is then made down to the fascia, which structure, together with the underlying muscles, is then carefully infiltrated. In thin individuals, these structures are infiltrated before the skin incision is made. These structures are then incised and the peritoneum exposed. Should any pain be complained of during this procedure, it is due to either incomplete infiltration, or to undue haste in making the incision after infiltration. Usually the pain occurs when a vessel is clamped with forceps, the sensory nerves being more numerous around blood vessels than elsewhere.

The line of incision in the peritoneum is next carefully injected, using a fine needle for this purpose. After this structure has been opened, gentle retraction is made on the wound and the parietal peritoneum is circuminjected with a 1/5 per cent solution of quinine-urea-hydrochloride. This produces complete anesthesia for several hours, and in cases where this injection is not made, the closing of the peritoneum is usually very painful and requires reinfiltration with novocaine. The vision of the structures in the neighborhood of the incision may then be increased by changing the posture of the patient from one side to the other. Operations on the viscera may then be done after carefully injecting the mesentery and omentum.

This technical work must proceed without haste, and the tissues must be handled gently and all traction avoided. The technic is necessarily far different from that ordinarily used when the patient is under a general anesthetic. Should complete exploration of the abdomen become necessary, a general anesthetic must be given but in such cases nitrous oxide-oxygen will usually suffice. In some procedures in the upper abdomen, the addition of anterior splanchnic block may be of value, but this procedure is technically difficult and it does not always give satisfactory results and there is additional danger of toxic symptoms arising from its use.

The technic of sacral anesthesia, and also of paravertebral anesthesia, requires some special training, but each is of value in an occasional patient whose life would be endangered by the use of any form of general anesthesia.

There is a marked postoperative difference between patients operated on under local anesthesia and those operated on under general anesthesia. Mason[2] has shown that the postoperative temperature reactions are higher in patients operated on under general anesthesia, and these patients suffer twice as often from postoperative nausea, vomiting and gas pains. Acute bronchitis and shock occur four times more often following ether than in similar cases operated on under local anesthesia. The convalescence of patients operated on under local anesthesia is more rapid, and their hospital stay is less than it is when general anesthesia is used. Garrett[3] and others have shown that postoperative leucocytosis is greater when general anesthesia is used than when local is used. The reason for this is not definitely known.

There is a marked contrast between patients operated on under local anesthesia and those under general anesthesia. Patients operated on under local anesthesia appear more normal and their morale is higher than those under general anesthesia. This has a marked effect upon the patient's friends and relatives, whose anxiety is relieved when they see the patient awake and usually able to smile.

CONCLUSIONS

1. Local anesthesia has been definitely proven to be safer than any form of general anesthesia.

2. It requires careful and painstaking technic, and the operative work is accomplished with a minimum of traumatism to the tissues. Obviously, rough handling of tissues is impossible when this form of anesthesia is used. It, therefore, develops an atraumatic technic which should be the object of all surgical work.

3. The gentle handling of tissues minimizes their injury and devitalization, and thereby lessens postoperative wound pain, and lessens the danger of wound infection. These wounds heal rapidly.

4. Local anesthesia should be the anesthetic of choice in many major surgical procedures where general anesthesia is now being used routinely.

5. In old or debilitated patients requiring surgical treatment, local anesthesia is a life saving measure. This applies in particular to prostatectomy, surgical complications following pneumonia or arising in

cases of pulmonary tuberculosis or pulmonary suppuration, and the surgical complications of diabetes.

6. Surgical shock is prevented, excepting in case of hemorrhage, by blocking of traumatic impulses. This prevents their depressing effect on the vital centers.

7. A knowledge of the intensity of the pain sense in the various tissues and structures of the body is essential for major operative procedures to be successfully conducted under local anesthesia.

BIBLIOGRAPHY

1. Braun: Local Anesthesia, p. 23, 1914.
2. Mason, J. Tate: Annals of Surgery, Apr., 1926.
3. Garrett, Geo. H.: Unpublished paper. Read before Portland City and County Medical Society, Feb. 16, 1927.

RETROPERITONEAL CYST

J. N. Davis, M.D.
KIMBERLY, IDA.

REPORT OF A CASE

History: Male, age 35, first seen April 8, 1925, with complaint of a pain in left hip radiating to rectum and a feeling of weight. Tires out easily and has been nauseated and has even vomited occasionally during the past two months. Thinks this trouble dates from an attack of "the flu" sometime early in February of this year. Bowels have always been more or less constipated but have been better than usual during this complaint, and emptying the rectum or bladder gives some relief from the dull pain about hip. The jar from walking or riding horseback down hill increases the distress.

Family history negative. Father 69, living and well. Mother died of eclampsia at birth of sixth child. Married, 5 children, wife pregnant now, no miscarriages. Denies venereal infections. Irregular attacks of stomach trouble began at about age 20 with more or less constipation all of the time. Seen Sept. 1, 1919, for this trouble which had been worse than usual since July 1 same year. A possible peptic ulcer diagnosed at this time but some simple treatment gave relief before examination was completed. Patient was not seen since this time until April 8, 1925, at which time he stated that he had had no further trouble with his stomach until the attack of "flu" this February.

Examination: A well nourished man, weight 152 lbs. b.p. 140/90. All examinations essentially negative except that upon rectal examination a cystic mass was felt extended from the left side of the bladder to the pelvis. Diagnosis: Probable cyst of left seminal vesicle. Advised drainage by the suprapubic route.

Operation (April 11, 1925): Low left rectus incision, peritoneum opened and pelvic cavity explored, and an extraperitoneal cyst discovered which seemed to be one large cyst about three inches in diameter and extending as exploration by rectum indicated. Peritoneum closed and the cyst drained extraperitoneally just to left of the bladder. Fluid was reddish brown in color and slightly cloudy. Amount 500 c.c. Wound continued to drain for three weeks. Uneventful recovery insofar as the operation was concerned. The prostate and seminal vesicle were not involved.

Patient was not entirely relieved in that a jar still caused some distress or horseback riding was painful. After about one month he went to work herding sheep and did very well but would ride sideways when on a horse. He gradually improved throughout the summer. Rectal examination two weeks and three months following the operation disclosed the condition about the same, a small mass was palpable and seemed to extend from the inferior lateral side of the bladder.

In September I learned indirectly that the distress in his hip was much less. On November 1 he was found dead on the hillside, death occurring about 7 p. m. Three or four days before this he had been thrown from a horse and had tumbled several hundred feet down the mountain side; following this fall he was unable to leave camp for two or three days and had just returned to his job with the sheep. He had complained of being very sore over entire body but nothing definite.

Autopsy (Nov. 2, 1925): The findings were negative except that the abdominal cavity was filled with dark blood and a multilocular cystic mass whose attachment was the left lateral pelvic wall. There was probably 1500 c.c. of cystic material. The fluid was of the same general characteristics of that withdrawn at operation.

Microscopic of cystic fluid revealed many lymphocytes, both large and small, but no cells. Slides of the cyst wall, made from pedicle and the adjacent wall, showed extensive round cell infiltration.

COMMENT

I believe that this cyst was stimulated to active growth by the operation, there being no cystic mass in the abdomen at time of operation.

Fundamentals and Clinical Aspects of Light Treatment. Edgar Mayer, Saranac Lak,e N. Y. (Journal A. M. A., July 30, 1927), discusses some physical characteristics of light; the photobiologic and physiologic effects of light; light and moving air from outdoors, and sunlight versus carbon arc and quartz mercury vapor arc lamp. The technic of exposures and methods of dosage determination are described fully. The most favorable response to solar exposures has been shown by the so-called pretuberculosis of children, and by tuberculosis of the lymph nodes (including hilum), the pleurae, bones and joints, peritoneum and intestines. Less favorable results are usually obtained in pulmonary, genito-urinary, laryngeal, ocular, aural and cutaneous tuberculosis. With joint tuberculosis the fibrous form of ankylosis has been overcome and joint function has been often restored. With lymph node disease, massive tuberculosis glands have been extruded from their capsules during healing by light. Fistulas are more resistant to treatment. With plain or cored carbon arcs of high amperage (from 55 to 75 amperes) or with arcs of lower amperage (from 20 to 29 amperes), the best results have been reported with cutaneous, bone and joint, lymph node, laryngeal, peritoneal and ocular (corneal and phlyctenular) tuberculosis; less favorable have been the reports on progressive pulmonary, genito-urinary and intestinal tuberculosis. In Mayer's own experience of ten years with the use of the quartz mercury vapor light as an adjuvant, the most favorable response has been encountered in intestinal tuberculosis. Other forms of tuberculosis which are frequently responsive to mercury arc light exposures are the "hilum glandular" or so-called hidden tuberculosis of children and adults; the superficial forms of tuberculosis, such as the cutaneous, oral or pharyngeal, laryngeal (except the acute and the edematous forms), corneal and phlyctenular ocular tuberculosis, and the lymph node and peritoneal tuberculosis.

TWO UNUSUAL CASES OF TULAREMIA

H. D. Junkin, M.D.
IDAHO FALLS, IDA.

In the southeastern section of the state of Idaho, where tularemia is quite common, most of the infections come from the bite of the deer fly, chrysops discalis. The two cases here reported were not fly-bitten but derived their infections from cleaning the same rabbit.

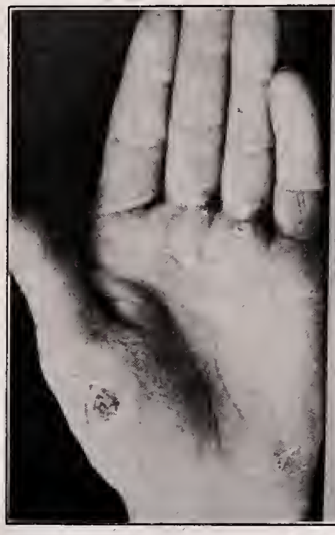
Fig. 1.

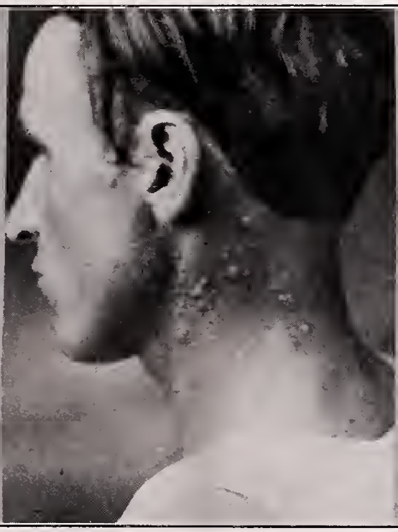
Fig. 3.

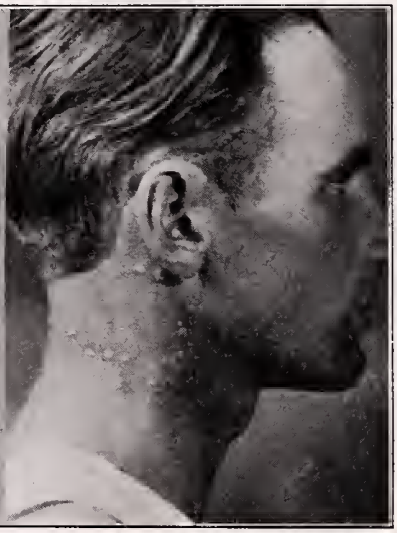
Fig. 2.

Each presented an unusual lesion. In one there was a papular eruption[1] and in the other were subcutaneous nodules resembling sporotrichosis.[2, 3]

Case 1. J. T., white, male, age 25 years, water master. While riding along an irrigation ditch in company with case 2 he shot a rabbit, in the cleaning of which both took part on June 3, 1926. Infection occurred on the palmar surface of the base of the left thumb through a punctured wound made by the entrance of a splinter of wood several days previously.

The onset of symptoms occurred June 5, and was marked by a definite chill, general malaise, aching body pains, headache, and pain at the site of infection and in the axilla. During the first week the temperature ranged from 100 to 104°; there were red streaks extending upwards from the site of infection and the axillary glands became enlarged. A deep ulcer developed at the site of infection (fig. 1). The left axillary glands suppurated and were drained on the twenty-first days of illness. The patient lost twenty-six pounds in weight. The course of the disease was about eight weeks, throughout which time there was fever.

Blood serum collected in the second week of illness agglutinated bacterium tularense and a second specimen, collected forty-two days after onset and forwarded to the Hygienic Laboratory, U. S. Public Health Service, agglutinated in all dilutions from 1:10 to 1:1280, but not in higher dilution.

A papular eruption appeared on the fourteenth day and was distributed over the face, forehead, neck, shoulders and anterior surfaces of the legs near the junction of the middle and lower thirds. The papules were red and hard but were not painful, nor did they itch. One papule occurred at the inner canthus of the left eye, causing considerable edema about the eye. The eruption remained for twelve days, disappeared for about a week, and then reappeared. The second appearance was much less marked than the first and disappeared by the third day (figs. 2 and 3).

Case 2. L. G., male, age 11 years, school boy. Infection entered through an abrasion which he had at the time of cleaning the rabbit and which was located on the palmar surface of the distal phalanx of the third finger of the right hand. Two days after cleaning the rabbit came the onset of symptoms which were essentially the same as in case 1. A deep ulcer developed at the site of infection and almost encircled the finger. The right axillary glands became enlarged but did not suppurate. Fever lasted about two weeks.

Blood serum collected in the second week and on the forty-second day showed the same agglutination titres as in case 1. Twelve subcutaneous nodules about the size of peas appeared on the seventh day of illness, distributed along the course of the vessels on the anterior surface of the right arm and forearm. The nodules were hard and painful on palpation; they were palpable for seven weeks. None of them proceeded to suppuration.

BIBLIOGRAPHY

1. Parker, R. R., and Spencer, R. R.: Six Additional Cases of Laboratory Infection of Tularemia in Man. Pub. Health Rep., 1926, XLI, 1341.

2. Hodges, F. C.: Three Cases of Tularemia, one Resembling Sporotrichosis. Am. J. Med. Sci., 1925, CLXX, 57.

3. McLaughlin, Allen and Jones, Walter M.: Tularemia. Weekly Bulletin of St. Louis Med. Soc., May 20, 1926, XX.

Coexisting Active Syphilis of Larynx with Active Pulmonary Tuberculosis. David Louis Engelsher, New York (Journal A. M. A., July 23, 1927), reports a case of a syphilitic laryngitis developing in a patient, aged 55, suffering from active pulmonary tuberculosis. There are cases of syphilis of the larynx which closely simulate a tuberculous laryngitis and make the diagnosis difficult.

ATTRACTIONS OF SALEM

The Oregon State Medical Society extends a cordial invitation to the medical profession of the Northwest to attend its fifty-third annual session on September 1-3.

Oregon State Hospital

Deaconess Hospital

The meeting will be held at Salem, the state capital, a beautiful city of twenty-six thousand, just fifty miles south of Portland on the Pacific Highway. As a capital city, Salem offers special attractions of both a general and medical nature. The city has a mean temperature during September of 60.7 degrees, so that visitors will be assured of comfortable, restful weather.

To motorists Salem offers smooth highways leading to it, while within a radius of twenty-five miles Oregon's capital has the largest paved mileage of any city in the Northwest. Within this area there are 235 miles of paved roads and more than 1,000 miles of gravel and macadam roads leading through interesting farming, orchard and dairying country to many points of natural beauty. The Cascade Mountains are only forty-five miles away, and a drive of eighty-five miles takes the tourist to the ocean. Salem has a fine centrally located municipal auto camp as well as numerous privately operated camps in various sections of the city.

The state institutions present another attraction. The state capitol building and grounds are beautiful in the late summer, while a splendid and inspiring view of the Willamette Valley may be had from

Willamette University

the dome of the State House. Of special interest to medical men will be the Oregon State Hospital, which houses nineteen hundred sixty-two inmates, representing all types of mental patients, and the State Institution for the Feeble-Minded with nine hundred persons of low-grade mentality. For those who are interested in the treatment of tuberculosis, the State Tuberculosis Hospital with its one hundred ninety beds offers an opportunity for the observation of the latest methods in combatting this disease. Salem also has two good sized private hospitals, the Salem Hospital and the Deaconess Hospital, each of which has a capacity of ninety beds. Along educational lines, Salem is the seat of Willamette University, the oldest university in the West. At Chemawa, nine miles north of Salem, the largest Indian school in the West has nine hundred students enrolled.

State Capitol

Rickets. Such factors as heredity, lack of exercise, cow's and human milk containing diets, and vitamins, Henry J. Gerstenberger, Cleveland (Journal A. M. A., July 23, 1927), says all play merely secondarily etiologic roles to the primary and fundamental cause of rickets, namely, inadequate exposure to the actinic rays or their equivalent of growing human infants. The amount of exposure or the amount of antirachitic factor in the form of cod liver oil necessary to prevent rickets seems to bear a direct relationship to the rate of growth. In other words, as the rate of growth usually is greater the younger the infant, his antirachitic factor requirement likewise is greater, and paradoxical as it may seem to be, the younger the infant the greater, for instance, is the amount of cod liver oil necessary to insure freedom from rickets. The actual maximum amount of cod liver oil required is not more than 1 cc., provided, of course, it is begun before the rickets develops. Therefore, in order to prevent rickets, the administration of cod liver oil or the exposure of the child to the actinic rays should be begun early, not later than the beginning of the second week of life. The great primary importance of the actinic rays to normal growth is evidenced by the fact that rickets occurs most severely and most frequently at the end of winter, and especially in those infants whose skins are pigmented. In preventing rickets in premature infants it seems necessary, in adidtion to giving an adequate supply of the antirachitic factor, to increase their protein and mineral intake, even when they are getting human milk as a diet. This can be done in a very simple manner by adding some boiled skimmed milk to the diet. If rickets has developed and if it is continuously and adequately treated with the antirachitic factor, likewise spasmophilia or tetany will not appear. In other words, idiopathic tetany or spasmophilia will not appear if rickets is properly prevented or treated.

Clinical Importance of Os Tibiale Externum, or Accessory Tarsal Scaphoid. The special abnormality to which James Warren Sever, Boston (Journal A. M. A., July 30, 1927), calls attention is the so-called os tibiale externum, or accessory scaphoid, first described by Bauhin in 1605. The presence of such a condition is of medicolegal importance, especially following trauma, because of the possibility of its being mistaken for a fracture. It is generally associated with badly pronated and weak feet, which are particularly resistant to corrective treatment. In such feet, with accessory scaphoids, radical treatment is necessary, such as an astragaloscaphoid arthrodesis to prevent discomfort and increasing deformity, provided always that the feet are painful or otherwise a source of disability. The patients' feet in these cases present a rather characteristic appearance. They are, as a rule, generally badly pronated, the scaphoids are markedly prominent, and the whole inside of the foot bulges. After seeing a few of these cases, one comes to suspect strongly the presence of an accessory scaphoid. A roentgenogram is always necessary to confirm the diagnosis and should always include both feet. The patient may not have known discomfort and disability at any age from this condition, but may go through life with symptomless, weak, flat and abducted feet. On the other hand, the feet may be painful, tender, and a source of weakness, leg and back ache, and general discomfort. Some operative procedure, such as an astragaloscaphoid arthrodesis, is advocated and practiced by many orthopedic surgeons for the relief of deformities of this type. Removal of the accessory scaphoid at the time of operation is indicated, and if it has become fused with the scaphoid itself, removal of this bony overgrowth is indicated. The tendon of the tibialis posticus should be shortened as well. Following this procedure, fixation in a cast in an adducted and inverted position of the foot for six weeks, followed by a plate for temporary support and exercises, will give the patient a very good foot.

NORTHWEST MEDICINE
The Journal of the State Medical Associations of Oregon, Washington and Idaho
Devoted to the Interests of the Medical Profession of the Pacific Northwest

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AUGUST, 1927

EDITORIAL

MODERN CONCEPTIONS OF VON JAKSCH'S ANEMIA

In 1889, Von Jaksch described in the *Wiener klinische Wochenschrift* a peculiar form of anemia which he had observed in infants and young children. In addition to varying degrees of anemia of the chlorotic type, these patients were invariably found to have a markedly enlarged, hard spleen, and usually a moderate increase in the size of the liver. In most of the cases there was a high leucocytosis, in some cases reaching 100,000 per cubic millimeter. He regarded the disease as possessing a marked tendency to spontaneous recovery. Since the time of his original communication, Von Jaksch's name has been attached the world over to infantile anemias bearing more or less close resemblance to the clinical picture which he apparently had in mind.

Cooley* has recently written a review of the literature bearing upon the subject, to which he has added his own personal observations and theoretical conclusions. Since Von Jaksch and his immediate successors lacked the opportunity of studying anemic diseases from the modern hematologic angle, it is not strange that clinicians have been in doubt as to which cases to call by his name. As the result, cases have been reported which have differed widely from each other and from the type which Von Jaksch described. The question is an important one, Cooley states, not only because of the need of more accurate classification of the anemias, but also because the question of possible benefit from splenectomy is involved. Authorities at present seem to be divided on the point of whether to include the Von Jaksch form among the primary or the secondary anemias.

Three modern views of this disease are to be discerned: (1) Von Jaksch's anemia cannot be differentiated from the varied types of secondary anemias of infancy; (2) it is found in a fairly constant form in early life as a result of rickets or the metabolic disturbance which causes rickets; (3) the modern school, which views other distinctive anemias as "biologic variants" of ordinary secondary anemias, would include Von Jaksch's anemia in this group.

As far as the relationship of rickets to Von Jaksch's anemia is concerned, Cooley points out that either of these conditions may occur independently of the other. Where they are coexistent, recovery from the one may or may not be simultaneous with recovery from the other. Furthermore, rickets may be accompanied by no anemia or by severe anemia of a purely secondary type. One might consider that the same metabolic derangement which causes rickets is responsible for the anemia. In most cases this anemia, when present, will be of the simple secondary type, but when it occurs in persons having some peculiar constitutional variation of the hemopoietic system, a clinical picture resembling Von Jaksch's anemia will result.

The Italians in particular have laid considerable stress on syphilis as an etiologic factor in this disease. A certain percentage of the patients or one or both of their parents can be shown to have a positive Wassermann reaction. Again, Cooley queries, may not the real explanation be that the syphilitic taint causes a defect in the hemopoietic system or aggravates a congenital fault?

Eppinger, who has made exhaustive pathologic studies of the anemia described by Von Jaksch, differs from him in emphasizing the gravity and chronicity of the disease. He has also called attention to the frequent finding of nucleated red cells and megaloblasts in the circulating blood in large numbers.

The many case reports in the literature of marked benefit from splenectomy have led Cooley to question how many of these patients actually had Von Jaksch's anemia. There are frequent references in the case histories to the existence of or tendency toward icterus. He himself has studied directly or indirectly seven patients of the Von Jaksch type. Of these two were splenectomized, with a resulting prolonged and marked tendency to erythroblastic crises in each instance. In spite of the lack of a hereditary history in these patients, he is inclined to classify them in close relationship to congenital icterus and the hemolytic enemias. Unfortunately, little attention has heretofore been paid to cell fragility and pigment chemistry studies in such patients. In a few reported cases increased fragility, positive indirect van den Bergh reaction and raised icteric index have been found.

Cooley would restrict the use of the term Von Jaksch's anemia to the hemolytic type just described.

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* Von Jaksch's Anemia. Cooley, T. B., Am. J. Dis. Child., 33:786, May, 1927.

All others he would designate as secondary anemias. In line with recent views of hemolytic anemias (hemolytic icterus, pernicious anemia, sickle-cell anemia), he believes certain patients develop Von Jaksch's anemia as a result of metabolic disturbances because they have a congenital abnormally reacting hemopoietic system. He thinks that the prognosis is grave in the chronic, well established cases, but that in early stages there is hope of benefit from splenectomy.

PROGRAM OF OREGON MEETING

The program for the meeting of Oregon State Medical Society for September 1-3 calls for the appearance of several nationally known medical men, including Dr. David Marine of Columbia University, well known for his work on the thyroid, Dr. Dean Lewis, widely known writer and professor of surgery at Johns Hopkins Medical School, Dr. Fred Lyman Adair of Minneapolis, who will discuss some important problems in obstetrics, and Drs. Wm. P. Murphy and Geo. R. Minot of Boston, who have been leaders in the treatment of pernicious anemia with liver. In addition there will be twenty-seven papers on a wide variety of medical and surgical subjects by members of the society.

The society has also arranged to have a public meeting and film at the Elsinore theater on the evening of September 1. This meeting will be given over to the demonstration of what scientific medicine has done and is doing to protect the health of the world.

The third day of the session will be devoted to recreation, including a golf tournament and automobile trips.

Headquarters for the session will be at the Hotel Marion, while scientific meetings will be held at the auditorium of the Chamber of Commerce Building. Hotel reservations may be made by addressing Dr. H. J. Stockwell at Salem.

The complete program for the meeting follows:

Thursday, Sept. 1

Morning Session

GENERAL MEETING

9:00 a.m. Registration of Delegates and Members. Music.

9:30 a.m. Call to Order by the President, W. B. Morse, Salem.

Address of Welcome, L. O. Clement, Salem, President Polk-Marion-Yamhill Medical Society. Music.

Address of Welcome, Hon. T. A. Livesley, Mayor, City of Salem.

Address of Welcome, Hon. I. H. Patterson, Governor, State of Oregon.

Invocation, W. C. Kantner, D. D., Salem.

Presentation of Program, Frederick D. Stricker, Portland, Chairman Committee on Scientific Work.

Announcement of Scientific Exhibit, Clyde C. Foley, Portland, Executive Secretary.

Announcement of Entertainment, H. J. Stockwell, Salem, Chairman of Committee on Arrangements.

10:00 a.m. President's Address, W. B. Morse, Salem.

10:30 a.m. "Eugenics in Oregon," R. E. Lee Steiner, Salem, Superintendent, Oregon State Hospital.

11:00 a.m. Motion Picture Film: "How Biological Products are Made," Courtesy Parke-Davis and Co., Detroit.

11:30 a.m. Meeting of the House of Delegates.

2:30-2:00 p.m. Luncheon.

2:00 p.m. "Pathology of the Fetus and Newly Born Infant With Special Reference to the Causation and Prevention of Fetal and Newly Born Deaths," Fred Lyman Adair, Minneapolis, Associate Professor of Obstetrics and Gynecology, University of Minnesota.

3:00-6:00 p.m. Section Meetings.

MEDICAL SECTION

Auditorium

President W. B. Morse, Salem, or Vice-President L. B. Bouvy, La Grande, Presiding.

"The Examination of Three Thousand School Children for Circulatory Disease," Helen A. Cary and T. Homer Coffen, Portland.

Discussion to be opened by Walter Brown, Salem.

"Stricture of the Female Urethra," John G. Cheetham, Portland.

Discussion to be opened by Franklin P. Johnson, Portland.

"Enuresis in the Male" (Lantern Demonstration), C. D. Donahue, Eugene.

Discussion to be opened by L. L. Truax, Klamath Falls.

"Collapse Therapy of Pulmonary Tuberculosis" (Lantern Demonstration), Ray W. Matson, Portland.

Discussion to be opened by G. C. Bellinger, Salem.

"Weak Feet and Postural Defects" (Lantern Demonstration), J. H. Robnett, Albany.

Discussion to be opened by Otis F. Akin, Portland.

"The Specificity of the Minot-Murphy Diet in Pernicious Anemia," I. C. Brill, Portland.

Discussion to be opened by Albert H. Ross, Eugene.

SURGICAL SECTION

Lounging Room

President-Elect Hugh Mount, Oregon City, or Vice-President John W. Sifton, Hood River, Presiding

"Osteomyelitis" (Lantern Demonstration), Richard B. Dillehunt, Portland.

Discussion to be opened by Thomas M. Joyce, Portland.

"An Improved Technic of Prostatectomy" (Lantern Demonstration), H. W. Howard, Portland.

Discussion to be opened by C. J. Bartlett, Baker.

"Acute Cervical Adenitis," Jerome L. Holzman, Portland.

Discussion to be opened by F. B. Freeland, Portland.

"Malignant Tumors of the Bones With Special Reference to the Maxilla" (Lantern Demonstration), Joseph A. Pettit, Portland.

Discussion to be opened by E. E. Mingus, Marshfield.

"A New Variation in the Technic of Repair of Prolapse Following Hysterectomy," Dwight R. Knapp, Portland.

Discussion to be opened by Raymond E. Watkins, Portland.

"The Relationship of the Pancreas to Gallbladder Infection," J. Earl Else, Portland.

Discussion to be opened by W. T. Phy, Hot Lake.

8:00 p. m. Public Meeting and Film, Elsinore Theatre.

Friday, Sept. 2

8.30 a. m. Meeting of the House of Delegates. Breakfast, Hotel Marion.

GENERAL MEETING

Auditorium, Chamber of Commerce

10:00 a. m. "Infections, Their Course and Prognosis," Dean Lewis, Professor of Surgery, Johns Hopkins Medical School, Baltimore.

11:00 a. m. "The Treatment of Pernicious Anemia by Means of a Diet Rich in Liver," Wm. P. Murphy and Geo. R. Minot, Boston.

12:00 a. m. "The Relation of the Medical Society to the Community," Clyde C. Foley, Executive Secretary, Portland.

12:15 p. m. "The Work of the Medical Reserve Corps," Major Herbert C. Mallory, U. S. Medical Reserve Corps, Portland.

12:30 p. m. Annual Meeting of the Oregon Public Health League, E. A. Sommer, Portland, President.
Luncheon, Hotel Marion.

2:00 p. m. "The Thyroid Gland and Its Relation to Disease," David Marine, Associate Professor of Pathology, Columbia University College of Physicians and Surgeons, New York City.

3:00-6:00 p. m. Section Meetings.

MEDICAL SECTION

President W. B. Morse, Salem, or Vice-President L. B. Bouvy, La Grande, Presiding.

"Formes Frustes," Charles E. Sears, Portland.

Discussion to be opened by M. G. Howard, Eugene.

"The Increasing Frequency of Pulmonary Abscess," E. A. Pierce, Portland.

Discussion to be opened by John H. Besson, Bend.

"Visceral Pain," W. K. Livingston, Portland.

Discussion to be opened by E. B. Stewart, Roseburg.

"To Hear or Not to Hear is the Question" (Lantern Demonstration), Frank E. Brown, Salem.

Discussion to be opened by Frank B. Kistner, Portland.

"The Therapeutic Value of Blood Given Subcutaneously," C. Ulysses Moore and Helen G. Dennis, Portland.

Discussion to be opened by Grant S. Beardsley, Eugene.

"The Use of Lipiodol as a Diagnostic Aid in Gynecology" (Lantern Demonstration), Albert Mathieu, Portland.

Discussion to be opened by Robert W. Stearns, Medford.

SURGICAL SECTION

Lounging Room

President-Elect Hugh Mount, Oregon City, or Vice-President John W. Sifton, Hood River, Presiding.

"Rationale of the Various Procedures Now in Use in the Treatment of Cancer" (Lantern Demonstration), R. C. Coffey, Portland.

Discussion to be opened by W. B. Holden, Portland.

"Anesthesia Other Than General Anesthesia," George Norman Pease, Portland.

"Some Practical Points in Local Anaesthesia" (Lantern Demonstration), C. W. Brunkow, Portland.

Discussion to be opened by R. B. Pilkington, Astoria.

"End Results on Fractures and Dislocations of the Carpal Bones" (Lantern Demonstration), E. A. Sommer, Portland.

Discussion to be opened by Charles R. McClure, Portland.

"Pedicled Skin Grafts," A. G. Bettman, Portland.

Discussion to be opened by F. G. Swedenburg, Ashland.

"The Medical and Surgical Treatment of Senile Cataract," Joseph L. McCool, Portland.

Discussion to be opened by J. J. Emmens, Medford.

7:00 p. m. Annual Banquet, Hotel Marion.

Ladies' Auxiliary Meeting and Dinner.

Saturday, Sept. 3

Recreation Day

Golf.
Automobile Trips.

WASHINGTON MEDICAL ASSOCIATION MEETING

The program of the annual meeting of the Washington State Medical Association at Tacoma, August 29-31, appeared in the July issue of this journal. The subjects for the surgical clinics, to be held at the Tacoma General Hospital by Dr. Dean Lewis, are announced as follows: August 30, 2 p.m., surgical clinic on breast tumors; August 31, 2 p.m., surgical clinic, subject to be announced later. With the exception of clinics, the meetings of the scientific sections are to be held at the First Baptist Church.

WASHINGTON ASSOCIATION OF COUNTY HEALTH OFFICERS

The association of county health officers of Washington will hold its annual meeting in conjunction with that of the state association. The program is announced as follows:

Monday, August 29

9:00 a. m. Meeting called to order. Reading of the Minutes.

9:30 a. m. "Public Health from the Viewpoint of the U. S. Public Health Service," Dr. L. D. Frick, Medical Director District No. 6, Seattle.
Discussion.

11:00 a. m. "Duties of Public Health Officers," Dr. E. T. Hanley, City Commissioner of Health, Seattle.

12:00 noon Luncheon, Winthrop Hotel.
Talk on Immunization of Scarlet Fever, Drs. Geo. Dick and Gladys Dick.

2:00 p. m. Report of County Health Officers and Discussions of Their Problems.

4:00 p. m. "Interstate Water Supplies and National Park Sanitation," H. B. Homan, Chief Sanitary Engineer, U. S. Public Health Service, San Francisco, Calif.
Discussion, H. W. Nightingale, Sanitary Engineer, State of Washington.

Tuesday, August 30

9:00 a. m. "Rural Sanitation," H. W. Nightingale. State Sanitary Engineer.

10:00 a. m.	"Public Health Nursing," Mrs. Mary Louise Allen, Chief, Division Public Health Nursing, State Department of Health.
10:30 a. m.	"Malarial Treatment of General Paresis," Dr. Frank Clancy, Urologist, Seattle.
	Discussion, Dr. Arthur Burns.
2:00 p. m.	"The Laboratory in Relation to Communicable Diseases," Dr. A. U. Simpson, Epidemiologist, State of Washington.
2:30 p. m.	Report of County Health Officers, Continued.

ADDITIONS TO IDAHO STATE PROGRAM

The program of the annual meeting of the Idaho State Medical Association appeared in the July issue of Northwest Medicine. The following additions to the program have since been announced: "Gastric and Duodenal Ulcers" and "Fractures of the Femur," Dr. J. F. Cowan, Stanford University Medical School, San Francisco. "Physical Aids," Dr. H. L. Langnecker, Stanford University Medical School, San Francisco. Dr. Langnecker will also conduct a clinic on the means of application of such aids to treatment as posture, exercises, physiotherapy and electrotherapy.

MEDICAL NOTES

OREGON

Baptists Propose Hospital. The Oregon State Baptist Association, at its annual meeting July 15, appointed a committee of forty-six ministers and laymen to be known as the Baptist Hospital Association. This group was instructed to study the hospital situation in Portland, and to plan a financial campagin for the purpose of erecting a Baptist hospital in that city.

Nutrition Expert Speaks. Dr. E. V. McCollum, the eminent authority on nutrition at Johns Hopkins University, Baltimore, Md., gave an address at Corvallis, July 11, on the subject "What We Know About Nutrition and How We Found it Out."

Clatsop County Medical Society met at Astoria, July 13. Addresses were made by Dr. F. D. Stricker, state health officer, Portland, Ore., Dr. W. B. Morse, Salem, president Oregon State Medical Association, and Mr. Clyde C. Foley, Portland, executive secretary of the organization.

Portland Has Low Infant Mortality Rate. A recent report from the department of commerce, Washington, D. C., places Portland in the lead of forty-eight cities of over 100,000 population in low infant mortality rates. The Portland rate in this report was stated to be 38.7 infant deaths per 1,000 born.

Dr. O. E. Patterson, who has been engaged in practice for the past two years at Westfir, has moved to Myrtle Creek.

WASHINGTON

Sewage Situation Studied. Dr. C. L. Dixon, King County health officer, has called attention to the fact that the sewage situation in the suburban communities north of Seattle city limits is a distinct menace to health. In these districts the sewage drains into a number of small streams. At an early date a mass meeting is to be held, when plans will be laid to remedy the situation by the construction of an adequate sewage disposal system.

Graduate Medical Lectures Held. The eleventh annual Graduate Medical Lectures of the University of Washington were held at Seattle, July 18-22. Dr. George W. Crile, Cleveland, Ohio, professor of surgery at Western Reserve University Medical School, delivered the lectures on surgery. The lectures on medicine were given by Dr. Charles L. Mix, Chicago, Ill., professor of medicine at Loyola University Medical School. Problems in orthopedic and fracture surgery were discussed by Dr. Charles L. Scudder, Boston, Mass., consulting surgeon of the Massachusetts General Hospital. Over three hundred physicians attended the courses.

The annual banquet for the lecture course was held at the Olympic Hotel on the evening of July 18. On July 20, a Public Health meeting for the laity was held at the First Presbyterian Church, under the auspices of the Washington Public Health League. The lecturers took part in this program. The session culminated on the last day in an outing to Mount Rainier.

The committee of the King County Medical Society which arranged the Graduate Medical Lectures is composed of Dr. David H. Houston, chairman, Dr. Frank Maxson, Dr. A. C. Crookall and Dr. David C. Hall, secretary.

Granted Licenses for Practice. Eighteen out of nineteen applicants who took the state medical examination at Seattle, July 12, succeeded in passing. Seven applicants were granted licenses by reciprocity. This was the first examination at which licensees were required to pass the newly created basic science test.

Following are the names of the successful applicants: Howard W. Chamberlin, Edward B. Giese, W. J. Glovatsky, Wallace Daniel Hunt, Robert L. McArthur, Cecil L. Morrow, all of Seattle; Christian Foss Quivli, Jr., and F. W. Weston, Tacoma; Warren H. Orr and Ralph L. Taylor, Portland, Ore.; Douglas B. Bell, Tomah, Wis.; Kenneth Donald Graham, Aberdeen; Harold L. Kennedy, Shelton; Arthur E. Lewis, Longmire; Louis A. Parsell, Spokane; Hugh M. Ross, Vancouver, B. C.; Morris N. Silverberg, Richmond Highlands; James S. Sutherland, West Vancouver, B. C.

Those licensed by reciprocity were: Donald L. Corlett, Seattle; Arthur Kirkland Harris, Portland; Howard E. Horner, College Place; Dolson W. Palmer and Glen Edgar Snyder, Spokane; Clifford Warren Whitaker, Longview; Barton E. Peden, Chiloquin, Ore.

Organize Hospital at Port Angeles. The fifty-room, fireproof hotel Olympic, at Port Angeles, has been purchased by Drs. D. E. McGillivray, Walter Taylor and Will Taylor, who are having it converted into a private hospital. In addition, the building will house the offices of these physicians, who have formed a clinic to be called the Port Angeles Clinic.

Plan Contagious Hospital. The officers of St. Elizabeth's hospital, Yakima, have announced that a $10,000 sanitarium for the care of contagious patients will be erected in the near future on the present hospital grounds.

The Longview Memorial Hospital Staff, at a meeting July 13, was addressed by Dr. John H. Fitzgibbon, Portland, on the subject of gastroenterology.

Heads Hospital Staff. Dr. L. G. Woodford has been reelected president of the staff of Providence hospital, Everett.

Interns go to Hawaii. Dr. H. W. Chamberlain, who has recently completed an internship at the Seattle City hospital, has been appointed assistant health officer under the Hawaiian territorial board of health. Dr. R. L. McArthur, also of the Seattle City hospital, has sailed for Hawaii, where he will become assistant physician to the leper colony there.

German Otologist Lectures. Dr. Max Brunner of Vienna, Austria, gave a series of twelve lectures on the subject of neurology of the ear in Seattle during the month of July. The lectures were sponsored by the oto-laryngolists of that city.

Dental-Medical Meeting. During the annual meeting of the Washington State Dental Association, which was held in Seattle June 18-20, members of the King County Medical Society were invited to listen to an address by Dr. Thomas Hartzell, D. D. S., M. D., of the University of Minnesota Dental School, Minneapolis, Minn. He spoke on the general subject of dental focal infection as related to systemic disease.

Whatcom County Medical Association at a meeting in Bellingham June 13, was addressed by a number of out-of-town guests, including Dr. G. H. Willard, president of the Washington Medical Association, Dr. A. T. Wanamaker of Seattle, president of the King County Medical Society, Dr. E. Weldon Young, Dr. O. H. Christofferson and Dr. George Dowling of Seattle.

Appointed Health Officer. Dr. Marion Le Cocq of Lynden, has been appointed county physician of Whatcom County to succeed Dr. E. L. Brinson.

Dr. G. E. Snyder, for the past year an intern at St. Luke's Hospital, Spokane, has located for practice at Odessa.

Dr. Thomas J. Boyd has purchased the practice of Dr. E. F. Sprague at Chewelah.

IDAHO

South Side Medical Association held a meeting at Rupert June 10. The meeting was devoted to a discussion of goiter.

Dr. Blanche Haines, national director of maternity and infancy work in the Children's Bureau, will conduct a series of health conferences in Idaho during the month of August.

Dr. G. G. Espe, formerly of Nampa, has become associated with Dr. O. D. Platt in the operation of Platt's Hospital at St. Maries.

Medical Wedding. Dr. Oliver G. Moorhead of Kendrick was married to Miss Anna Leora Hansen of Henry, South Dakota, June 18.

OBITUARIES

Dr. Ernest F. Tucker, Portland, Ore., died at St. Vincent's Hospital July 2, following a prolonged illness, aged 65 years. He was born in New York City in 1861, and graduated from Harvard University Medical School in 1884. He established practice at Portland in 1890, where he was one of the first members of the faculty of the University of Oregon Medical School, occupying the chair of professor in the department of gynecology. He was a charter member of the Pacific Northwest Surgical Association. He retired from active practice in 1923.

Dr. John W. Huston. Juneau, Alaska, a member of the United States Public Health Service, accidentally fell from a boat and was drowned in the Yukon River July 17. He was born in 1895, and graduated from the University of Oregon Medical School in 1922. Following his graduation, he was attached to the Public Health Service at Port Townsend until 1926, when he was placed in charge of the hospital at Juneau.

REPORTS OF SOCIETY MEETINGS

EASTERN OREGON DISTRICT SOCIETY

Pres., J. C. Bartlett; Secty., C. J. Bartlett

The annual meeting of the Eastern Oregon District Medical Society was held at Wallowa Lake, August 6.

Scientific papers were read as follows: "Special Treatment of Active Clinical Tuberculosis," Dr. G. C. Bellinger, Salem; "Goiter," Dr. C. C. Tiffin, Seattle; "Spinal Anesthesia," Dr. W. T. Phy, Hot Lake; "Surgical Treatment of Peptic Ulcer," Dr. J. T. Mason, Seattle; "The Rationale of Various Agencies for the Treatment of Cancer," Dr. R. C. Coffey, Portland; "Five Years in the Exclusive Use of Local Anesthesia in Goiter Surgery," Dr. C. C. Tiffin, Seattle; "Medical Electricity," Dr. J. E. Cole, Spokane.

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., A. J. Wanamaker; Secty., W. W. Bell

A special meeting of the King County Medical Society was held June 23 in the auditorium of the Medical and Dental Building, President Wanamaker presiding. The Seattle Orthopedic Society arranged the program which was given by visiting members of the American Orthopedic Society. Dr. W. Orr, Lincoln, Nebr., discussed "Treatment of Osteomyelitis." He stated that tubes and other drains allow infection to enter wounds, and that antiseptics irritate the granulating tissues. He advised thorough exposure and cleaning out of infected tissue in both acute and chronic cases of osteomyelitis, followed by painting of wound and skin with iodine and packing with vaseline gauze. A cast is then put on and no dressing done for three to eight weeks. He also treats compound fractures by this method. Dr. Orr's paper was discussed by Dr. Roger Anderson.

Dr. J. S. Speed, Memphis, Tenn., discussed flexion contractures of the hip, particularly those following infantile paralysis. He uses a modification of the Soutter operation in these cases, with the exception that he depresses the crest of the ilium downward.

Dr. John Porter, Chicago, Ill., spoke on the efficacy of traction methods in the treatment of arthritis. He has found that by this means pain is relieved and a more useful joint secured. One must take pains to have the appliance comfortable. Where the knee joint is affected the leg must be elevated and flexed at the beginning of treatment. As the pain is relieved, the limb may subsequently be lowered. In shoulder cases the arm is abducted and the forearm slightly elevated. Later an aeroplane splint is applied.

Dr. F. D. Dickson, Kansas City, Mo., gave a brief discussion of the subject of "Low Back Pain." He made a plea for careful differential diagnosis in such cases. He does not believe in the great prevalence of sacroiliac slips, but thinks the lumbosacral joint is the one most commonly affected in this region. Furthermore, this point is a frequent site of developmental abnormalities, such as flat articulations, increased sacral inclination and spina bifida occulta. For patients who must engage in hard labor he advocates a stabilizing operation.

WESTERN BRANCH OF THE AMERICAN UROLOGICAL ASSOCIATION

Hitherto the annual meeting of the Western Branch of the American Urological Association has been in conjunction with the California State Association meeting. This year it was divided, Portland having clinics on July fifth, Seattle clinics and a scientific program the sixth, and Vancouver clinics on the seventh.

Seattle had a series of dry clinics in the Medical and Dental Building auditorium in the forenoon. In the afternoon the following program was given: "Tuberculosis of the Kidney," Bernard G. Scholefield, Boston, Mass.; "Data on the Infected Prostate," William H. von Lackum, Rochester, Minn.; "Gonococcal Infection of the Kidney," W. G. Shultz, Tucson, Ariz.; "Confusing Pyelograms," Miley B. Wesson, San Francisco, Calif.; "Renal Sympathectomy," Elmer Hess, Erie, Pa.; "Studies in Normal Ureteral and Vesical Pressure," Henry A. R. Kreutzmann, San Francisco, Calif.; "Some History, Examination and Hospital Admission Forms for Urological Cases," Herbert Augustus Rosenkranz, Los Angeles, Calif.; "Urology in Infants and Children," William E. Stevens, San Francisco, Calif.; "Carcinoma of the Bladder," Joseph Walker, Los Angeles, Calif.; "Bilateral Renal Calculi," Harold L. Morris, Detroit, Mich.; "Management of the True Bleeder in Urological Surgery," Charles P. Mathe, San Francisco, Calif.; Moving picture. "Suprapubic Cystostomy by a Transverse Incision, Technic Illustrated in Moving Pictures," Wilbur B. Parker, Los Angeles, Calif.; "Economic Surgical Treatment of Acute Retention Due to Stricture," G. Sherman Peterkin, Seattle.

All papers were of exceedingly high quality. At the clinical meetings a great deal of friendly disagreement was manifest. With one clinical case it was a question whether to remove a kidney or not. Discussion showed the men to be about equally divided. A vote gave a difference of two votes on whether to operate or not. Thus freedom of discussion and good fellowship were very much in evidence throughout the meetings.

Officers elected for the ensuing year were Dr. Anders Peterson of Los Angeles, president; Dr. Wirt B. Dakin of Los Angeles, vice-president; Dr. Wm. E. Stevens of San Francisco, secretary, and Dr. A. H. Peacock of Seattle, treasurer.

PUBLIC HEALTH LEAGUES

WASHINGTON

The annual convention of the Public Health League of Washington will be held in conjunction with the session of the Washington State Medical Association. The League meeting will be held at the Winthrop Hotel on Tuesday, August 30, and will be in the nature of a luncheon-banquet.

Dr. A. O. Loe of Seattle, president of the League, will preside and offer the annual report, covering the progress and activities of the organization during the twelve months' period. Dr. George W. Dowling, executive chairman, and other officers, will speak. It is planned to throw the meeting open to an informal discussion of League problems that the views of members may be heard as to future policies.

Last year at the Spokane meeting one hundred fifty persons attended the League luncheon and with the indications pointing to a record-breaking Association meeting at Tacoma this year, it is expected that the luncheon will attract the largest meeting in the history of the organization.

Civic Survey. In order to have exact information in the files, officers of the League have authorized a medical civic survey of Washington. This survey will tell the story of how many "joiners" there are in the profession. It is desired to ascertain which physicians belong to the Rotary, Kiwanis, Lions and other such luncheon clubs; what ones are attending parent-teacher association sessions; which are affiliated with church clubs or with lodges and other such groups. It is the hope of the League officers that this information will be available for the annual convention and that from the report valuable plans may be established, especially with the view of providing every organization in the state with public health speakers during the year.

The list of two hundred forty-eight speakers who have volunteered to speak on various health subjects, reaching one hundred topics, has created remarkable interest throughout Washington. It was not expected that demands for speakers would come until after the summer, but many requests have been filed and scores of physicians have already been called upon to talk. One club has asked for an assignment of six speakers a year. Others have given assurance that they will dedicate at least two meetings each twelve months to public health. It is planned that more than one thousand of these talks will be delivered annually hereafter in the state.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

PRACTICAL LECTURES ON THE SPECIALTIES OF MEDICINE AND SURGERY. Delivered Under the Auspices of the Medical Society of the County of Kings, Brooklyn, New York. Second Series, 1924 to 1926. 110 Illustrations. $7.00. Paul B. Hoeber, Inc., New York, 1927.

These lectures are very valuable because they are practical and given by experts. To enumerate some of the useful facts brought out in some of the lectures we may begin with toxemias of pregnancy by Polak. This is a splendid summary of the subject in which he points out that in continuous vomiting of pregnancy the thyroid gland and the liver are chiefly at fault and by feeding candy and carbohydrates in excess, and giving thyroid extract in the moderate cases, we may stop the trouble; while in the most severe case by rest in bed with hypodermoclysis of normal saline to overcome dehydration, hypermesis may be cured. Free eclamptic toxemias are due to hepatic and renal insufficiency. The patient is put to bed on a milk and fruit juice diet. If eclampsia develops the patient is treated by morphine, bleeding and intravenous injection of magnesium sulphate, but labor is not induced artificially.

In an admirable article by Martin on septicemia he shows that in most cases microorganisms do not increase in the blood but showers from local foci are quickly taken up by the recticuloendothelial system or capillary mesh work in the spleen, liver and bone marrow, and only when this system is overwhelmed by enormous numbers of organisms do they multiply in the blood.

The term sepsis with bacteriemia is, therefore, preferable to septicemia. The prognosis is not so bad as usualaly conceived. In streptococcus bacteriemia there were 14 recoveries and 23 deaths. In staphylococcus bacteriemia there were 12 recoveries and 14 deaths. He emphasizes the danger of interference with small infections particularly on the face by pricking, stabbing, squeezing, or puncture with a toothpick and carbolic acid, and instances many cases of general bacteriemia from such treatment. The reviewer remonstrated with a doctor who was squeezing a small boil on his neck. A few hours later the latter had a severe chill and developed a general septicemia. Martin deplores the use of chemicals injected into the blood stream but advises removal of foci of infection where this may be done, or cutting off the entrance of organisms as in tying the jugular in thrombophlebitis of the lateral sinus, or in blood transfusions in chronic septicemia with anemia.

The important topic of treatment of pneumonia is ably discussed by Lohman. The specific serum treatment, especially of Type I pneumonia, has not proved successful except at the Rockefeller hospital where it was instituted. This applies to the large hospitals in the East where the mortality of 20 per cent with treated cases corresponds with that of the untreated. So also in the Army hospitals the mortality in four hundred treated cases was the same as that in untreated. It was the same also with Huntoon's pneumococcus antibody, which is not regarded as an improvement over specific serum, and since this lecture was given a case report from Mt. Sinai Hospital, including a large series of cases, shows that the mortality was no better than in untreated cases. Lohman alludes to oxygen treatment, but does not give any statistics. There should be a normal concentration of 95 per cent oxygen in arterial blood and 65 to 75 per cent in venous blood. In cyanosis in pneumonia the oxygen concentration in arterial blood may be only 60 per cent.

The Mayo Clinic has found the use of the Collin's tent of inestimable value in pneumonia with cyanosis in which an atmosphere of 40 per cent oxygen is constantly attained. In normal air there is about 20 per cent oxygen and with the ordinary administration of oxygen by inhalation through cones there is not more than 2 per cent increase in oxygen obtained by the patient.

So that it seems as if the oxygen administration to patients in tents is the most promising form of newer treatment of pneumonia that has been yet offered. It is stated that an iron bed will burn in a concentration of 40 per cent oxygen, therefore, great caution must be used with respect to a naked flame in the neighborhood.

Similar excerpts might be increased a thousand fold but enough has been said to give an idea of the unusual value of this well-known course of lectures.

WINSLOW.

PRACTICAL OTOLOGY. By Morris Levine, M.D., Associate Professor of Otology, New York Post-Graduate Medical School and Hospital, etc. Illustrated with 145 engravings and three colored plates. 387 pp. Cloth, $5.50. Lea & Febiger, Philadelphia, 1927.

This is not intended to be a comprehensive text book but rather one man's method of practicing otology. There is no theorizing and no confusing array of various treatments and operations. It makes an ideal textbook for the general practitioner who is called upon to treat occasional ear cases, and the specialist in otology will find many helpful suggestions of a practical nature. It is an entirely new work that contains all the latest advances in otology and, better still, it omits much of the obsolete material so often carried along in succeeding editions of many of the older works. BRUGMAN.

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1926 COLLECTED PAPERS OF THE MAYO CLINIC AND THE MAYO FOUNDATION, Rochester, Minnesota. Octavo of 1329 pages, with 386 illustrations. Philadelphia and London: W. B. Saunders Company, 1927. Cloth, $13.00 net.

In this number there are notable contributions to our knowledge of the physiology, pathology and treatment of liver and gallbladder diseases. Many of these consist of original researches. Particularly valuable is the work of Mann and his coworkers, who have revolutionized our conceptions of liver function. Mann's experiments, especially his feat in performing hepatectomy successfully and keeping the hepatectomized animals alive, constitute an epoch in physiology acknowledged all over the world.

He has shown that bilirubin is not made in the liver but is derived from hemoglobin and is formed in the spleen and bone marrow. After an animal is hepatectomized it becomes deeply jaundiced because the bilirubin can no longer be excreted from the liver. Many highly important facts have been developed by Mann's work, such as that after removal of the animal's liver it can be kept alive by glucose injected into the blood because the glycogen function is gone and the liver no longer supplies the blood with sugar. The urea function of the liver is also lost whereby toxic nitrogenous products (urino acids) are normally converted into innocuous urea.

These two discoveries alone have shown us in liver disease with jaundice the necessity of supplying glucose and carbohydrates, and the inadvisability of a protein diet. McVicar, in a very valuable monograph on "Diseases of the Liver and Biliary Passages: the Clinical Applications of Some Recent Investigations," has summarized very successfully all the recent researches on the subject and their bearing on medical practice. Dr. Charles H. Mayo contributes a most illuminating paper with the taking title of "The Gallbladder of 1926." This condenses a great mass of information concerning the physiology and pathology of the gallbladder and biliary tracts. In it he points out the fact that sympathetic stimulation leading to spasm of the sphincter of Oddi causes undue pressure in the gallbladder and increased filtration of the fluids from the bile, and therefore overconcentration of the bile salts and solid residue in the gallbladder, the first step in the production of gallstones which may form in a few hours. He postulates a hypothetical cause of gallbladder disease in sympathetic stimulation of the sphincter of Oddi, induced, perhaps, by food deficiency or toxins, with altered nutrition in the viscus due to circulatory changes secondary to spasm, and a secondary infection due to lowered resistance in the walls of the gallbladder. Similarly toxins of food which may produce sympathetic spasm of vessels of the skin and urticaria may likewise cause irritation of the sympathetic system, spasm of circular muscle in the digestive tract and lead to appendicitis and diverticulitis, duodenal and gastric ulcer. The paper teems with that kind of suggestive thought, which is most stimulating to the scientific mind and helpful to scientific progress, and displays all the essential qualities that go to make a great medical teacher.

There is an admirable discussion by Dr. W. J. Mayo on surgery of the gallbladder. In about 5,000 cholesystectomies done at the Clinic there were only 17 in which MacCarty found no sufficient pathology to warrant removal of the gallbladder, and in many of these it is probable that the pathology was wanting because the disease of the organ was in a quiescent state.

Rosenow has shown that pathogenic organisms may often be cultured from the submucosa of the gallbladder while the bile is sterile. Ninety per cent of the operations on the gallbladder are cholecystectomies and William Mayo finds little importance in the controversy of cholecystostomy versus cholecystectomy. Only a very few points have been touched upon in this one section relating to the physiology and pathology of the liver and biliary tract and nothing has been said about the greater part of the volume owing to lack of reviewing space. This is wholly unnecessary, however, as the Mayo Clinic Collected Papers is as much of a literary institution as the Clinic itself is a medical institution.

WINSLOW.

THE SURGICAL CLINICS OF NORTH AMERICA. Vol. 7., Nos. I and II, Cancer, February, 1927, April, 1927. W. B. Saunders Company, Philadelphia and London.

These two numbers are devoted entirely to the question of cancer, particularly its metastatic manifestation and its treatment by radium and x-ray. The chapters by Schamberg, Weatherwax and Carnett, dealing with radiologic technic for malignancies of various sorts and locations and the results obtained therefrom, are chapters that are worthy of study by the general surgeon. The chapters on branchiogenic sinus and cancer of the accessory sinuses of the nose are well written and of interest.

This publication since its inception has been a valuable addition to the library of the surgeon. The present number marks a very considerable change from the preceding in that it is monographic. It is to be hoped that, in tre future, these publishers will deal similarly with other surgical topics. STURGIS.

A MANUAL OF GYNECOLOGY. By John Osborn Polak, M. Sc., M. D., F. A. C. S. Professor of Obstetrics and Gynecology, Long Island College Hospital, etc. Third Edition, Thoroughly Revised. Illustrated with 145 Engravings and 12 Colored Plates. 402 pp. $5.00. Lea & Febiger, Philadelphia, 1927.

The author has compressed within one volume the essential facts in the broad subject of gynecology. This edition brings the subject matter up to date and there is added a brief summary on the glands of internal secretion and their effect on the sexual organs. As a concise and definite exposition of the diseases peculiar to women, it perfectly fulfills the aim of the author.

FORBES.

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The Journal of the State Medical Associations of Oregon, Washington, Idaho and Pacific Northwest Medical Association

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ORIGINAL CONTRIBUTIONS

MALARIAL TREATMENT OF NEUROSYPHILIS*

AS SEEN IN WAGNER—JAUREGG CLINIC

Frank J. Clancy, M. D.
SEATTLE, WASH.

The possibility of curing general paralysis has always seemed remote. Conclusive proof of the cause of paresis, however, seemed to justify a more hopeful view of the possibility of favorably influencing the condition, and experimenters have tried both direct and indirect methods in attempting to reach the spirochetes in the brain and hinder their growth. While each new method has seemed to attain some degree of temporary success, the end-results have remained little or no better than those obtained by the mercury and iodide method of twenty-five years ago.

Following the establishment of the fact that paresis is due to the spirocheta pallida, administration of the arsenicals became the accepted form of treatment. Various methods were devised to introduce this form of medication into more intimate association with the parenchyma of the brain, and various preparations or combinations of the drug in different doses were used, but without satisfactory results. It cannot be denied that these forms of treatment have produced improvement in early cases, but such improvement is usually incomplete and of short duration. Further, the summarized reports of Enge[1] from 1916 show that the results of salvarsan treatment in paretics are by no means encouraging.

In view of this failure of the usual methods of treatment, medical thought has now turned to the nonspecific fever method of treating meta- and paralues. The malarial fever treatment in particular has seemed to prove of real value.

Historically the nonspecific fever method of treating mental conditions had its origin in a very old psychiatric observation, according to which mental disease was believed to be favorably influenced by intercurrent febrile diseases. As far back as the time of Hippocrates and Galenus, it was known that such diseases seemed to have a good influence on the course of psychosis. Boerhaave[2] and Syndenham knew of the favorable influence of an intercurrent fever on the course of insanity. Reil[3] says that Reuss in 1776 reported improvement in maniacal cases that contracted smallpox. Many others have also reported similar observations. In fact, the literature appearing since the middle of the last century contains an especially large number of references to mental cases that were greatly improved, as a result of having had feverish infections.

In 1887 Professor Wagner-Jauregg[4] stated his original premise, which in substance was that artificial production of fever might be utilized as a therapeutic procedure in the treatment of "psychosen." His first experiments were conducted in substantiation of this theory during the winter of 1888 and 1889, when he attempted to infect chronic incurable cases of "psychosen" with erysipelas. These experiments, however, met with failure, because the subjects happened to be resistant to inoculation with erysipelas. Following this initial failure Wagner-Jauregg turned to bacteriology in his search for a product that would produce a fever approaching that found in nature.

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* Read before King County Medical Society, Seattle, Wash., April 25, 1927.

Koch's Old Tuberculin, which had just become known, was the first of such bacterial products to be used in Jauregg's experiments. It was selected for experiment in 1890, chiefly because it was the only one whose effects were known. Böck,[5] one of his pupils, reported the first therapeutic results obtained from this type of treatment in cases of "chronischen psychosen." In 1900 sixteen unselected cases of paresis were treated by the tuberculin method in the Wagner-Jauregg clinic and compared with untreated ones. The results obtained seemed favorable, for the patients receiving treatment lived for a greater average length of time and had longer remissions than did the controls. Others have since reported good results obtained from this type of therapy.

Tuberculin is still used in the Wagner-Jauregg clinic, where it is regarded as especially indicated in cases of paresis in which malarial infection would probably be too severe. The technic of the tuberculin method may be found in Gerstmann's book, "Die Malariabehendlieng der Progressiven Paralyse."

The impetus given this work by Wagner-Jauregg afforded stimulation to many authors who tried other nonspecific substances, such as albumin, sodium nucleate and milk for fever production. It was noticed, however, that the results obtained by accidental intercurrent febrile reactions lasted longer than those obtained by the injection of proteins or bacterial products. This led Wagner-Jauregg back again to his original premise, that of artificially producing an infectious fever. Tertian malaria was chosen for this purpose, as originally suggested, for it offered no especial dangers and could be interrupted at any time. A review of this subject would hardly be complete without calling attention to his original nine cases treated in Vienna in 1917.

Of these one died of an epileptic attack before the end of treatment. Of the remaining eight, two were uninfluenced and transferred to an asylum. Four cases, however (1-5-6-9 of Wagner-Jauregg's[6] publication), were discharged in full remission to their former occupations after two to six months' observation. These cases had seven to twelve malarial fever attacks, and only three intravenous injections of .3 to .6 grams of neosalvarsan. The subsequent course of the disease in these four cases is of special interest.

The fourth case (case 6), who presented the classical symptoms of paresis before treatment, since the malarial treatment in 1917 has remained free of symptoms and been able to fulfill the duties of a very responsible position. The second case (number 5) had a relapse after six months. However, after some months, he again had a remission, and in December, 1918, was discharged as capable of working. He succeeded in obtaining a responsible position with the government as a contractor.

The third case (number 1) had a relapse, and was admitted to a psychiatric clinic in Hamburg, where he was treated with arsenical medication. A remission was obtained and he was allowed to go about as he wished while under the care of the asylum. He gives the clinical picture of a stationary case.

The fourth case (number 9) came again to the Wagner-Jauregg clinic in a relapse with delusions, and died four months later as a result of influenza and lung abscess.

The last two cases (3 and 8) showed no marked improvement until a year after the treatment. One was a soldier who became able to perform minor tasks in the army and who has made gradual improvement since, and who has finally come into a complete remission with ability to return to a responsible position.

Case number 8, after a remission lasting some months, committed suicide.

The facts in case 3, the soldier, teach that, even though the beginning is slow and discouraging, such cases may finally progress to a full remission, hence a bad prognosis is at first unjustified.

THE MALARIAL FEVER TREATMENT

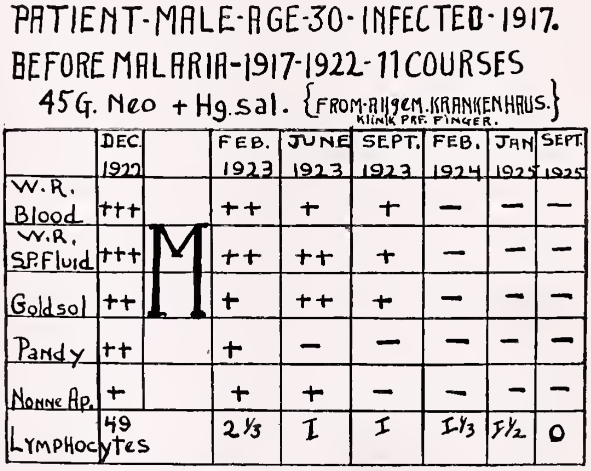
The type of malaria used in the treatment of meta- and paralues is very important. Quartain, or any other tropical malaria, cannot be controlled and, therefore, must not be used. Only proven cases of tertian malaria are safe. Hence, great care must be exercised in selecting the malarial case to be used in inoculating others. The importance of this principle was clearly demonstrated by an accident occurring in 1918 in the Wagner-Jauregg Clinic.

The first group of patients, mentioned above, had already been treated. A second group of paretics were then inoculated with blood from a supposed case of tertian malaria. After the third attack of fever it was established that the disease was tropical malaria, not tertian, and treatment was immediately instituted to stop its course. The condition of the patients became progressively worse in spite of daily administration of three grams of quinine and a total of five grams of neosalvarsan. The first case died on the thirty-first day. Two were treated with quinine and neosalvarsan before the fever became manifest, but both died twenty-four and thirty-nine days after inoculation. A fourth case was controlled only after forty-five days of intensive quinine and neosalvarsan therapy. This experience teaches that in no instance should a malarial donor be selected who has been in the tropics, and the blood should not be used until it has been positively proven to be benign tertian malaria. With the establishment of clinics with a proven stock this danger is, of course, obviated.

The technic usually used in performing the inoculation of patients with malarial blood is simple. Ten to twenty c.c. of blood are withdrawn from a malarial patient into a glass syringe. The exact amount will depend on the number of patients to be inoculated. It is withdrawn in the same manner as for a Wassermann and, to avoid clotting, is immediately injected into the luetic patient either subcutaneously between the scapulae or intravenously. If injected subcutaneously between the scapulae, several stab punctures should be made with the needle in order to insure the entrance of the plasmodium into the blood stream. The usual dose of the malarial blood is five c.c. for subcutaneous injection, and two to three c.c. for intravenous.

The blood for inoculation purposes may be withdrawn either during a chill or during an interval. Precaution should be taken that the blood is withdrawn from the malarial patient prior to the administration of quinine. The incubation period, when the subcutaneous inoculation is used, is ten to fourteen days; in intravenous administration, three to five days. The course of the febrile reaction which results is likely to be a variable one. Commonly the first three to four attacks of fever are tertian, then passing to the quotidian for the remainder of the period of infection. The fever may be of quotidian type from the beginning, however. The typical tertian type of fever is more comfortable to the patient and convenient to the physician, in that it allows an afebrile period every other day.

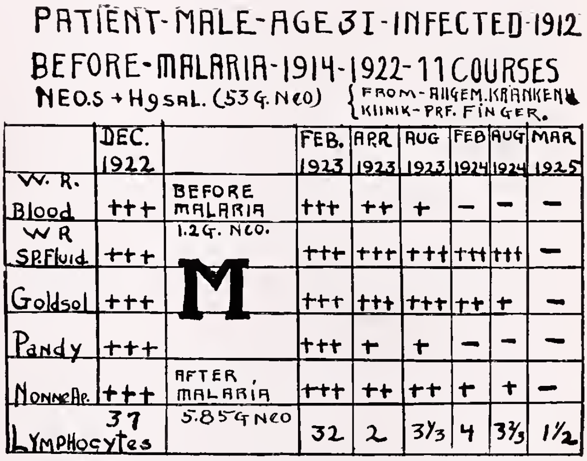
The number of malarial paroxysms to be allowed is of importance. Ten to twelve have been determined in the Wagner-Jauregg Clinic as the ideal number for obtaining the best therapeutic results. Twelve is the maximum number permissible, and more than this is considered both useless and dangerous.



PATIENT-MALE-AGE-30-INFECTED-1917.
BEFORE MALARIA-1917-1922-11 COURSES
45G. Neo + Hg.sal. {FROM-Allgem.KRANKENHAUS. KLINIK PRF. FINGER.}

	DEC. 1922		FEB. 1923	JUNE 1923	SEPT. 1923	FEB. 1924	JAN 1925	SEPT. 1925
W.R. Blood	+++	M	++	+	+	—	—	—
W.R. SP.Fluid	+++		++	++	+	—	—	—
Goldsol	++		+	++	+	—	—	—
Pandy	++		+	—	—	—	—	—
Nonne Ap.	+		+	+	—	—	—	—
Lymphocytes	49		2 1/3	1	1	1 1/3	1 1/2	0

Case 1. Latent Wassermann-fast paretic at Finger's Clinic. Had received eleven courses of neosalvarsan, 1914-1922. Administration of malarial infection at M. No salvarsan before or after this. Note decline and final disappearance of Wassermann at stated examinations.



PATIENT-MALE-AGE 31-INFECTED-1912
BEFORE-MALARIA-1914-1922-11 COURSES
NEO.S + Hg sal. (53 G. Neo) {FROM-Allgem.KRANKENH. KLINIK-PRF. FINGER.

	DEC. 1922		FEB. 1923	APR 1923	AUG 1923	FEB 1924	AUG 1924	MAR 1925
W. R. Blood	+++	BEFORE MALARIA	+++	++	+	—	—	—
W R SP.Fluid	+++	1.2G. Neo. M	+++	+++	+++	+++	+++	—
Goldsol	+++		+++	+++	+++	++	+	—
Pandy	+++		+++	+	+	—	—	—
Nonne Ap.	+++	AFTER MALARIA	+++	++	++	+	+	—
Lymphocytes	37	5.85G Neo	32	2	3 1/3	4	3 2/3	1 1/2

Case 2. Latent Wassermann-fast paretic at Finger's Clinic. Had received eleven courses of neosalvarsan 1914-1922. Administration of malarial infection at M, preceded and followed by neosalvarsan. Note decline and final disappearance of Wassermann at stated examinations.

During the febrile period the heart should be routinely supported by digitalis, strophanthus, caffeine or other cardiac stimulants, and the patient should be particularly observed for symptoms of cardiac failure. After eight or twelve reactions the malarial infection is interrupted by quinine. About six grams in divided doses is usually required for this purpose. According to Gerstmann this quantity has shown itself sufficient to completely cure tertian malaria. The fever subsides on the second day of treatment, the blood becomes free of parasites, and a relapse of the artificially produced malaria never occurs. Four to four and one-half grams of neosalvarsan are administered in the usual manner after the third day of quinine therapy. The wisdom of administering neosalvarsan after the malarial therapy is debatable at present. If the patient does not tolerate the drug well, it may be dispensed with.

There are certain contraindications to the use of the malarial fever treatment that may be listed as follows: (1) Nephritis acute or chronic, (2) obesity with fat heart, (3) tuberculosis, if active, (4) cachectic individuals, (5) aneurism, (6) cardiorenal disease, (7) arteriosclerosis. Although these conditions are listed as contraindications, it must be borne in mind that progressive paralysis is a lethal disease, and that a certain amount of risk is justified, providing the relatives of the patient are properly apprized regarding it.

Certain cases may be unable to withstand eight to twelve malarial paroxysms, when permitted to occur in the usual way. Treatment of such patients may be undertaken, however, allowing the occurrence of only two or three febrile reactions, three grains of quinine being administered during an interval for the purpose of interrupting the fever for several days. In case the fever does not reappear spontaneously, its return may be provoked by giving small intravenous injections of polyvalent typhoid vaccine. Two or three additional paroxysms may then be permitted again to occur. If necessary, they may again be interrupted. In such manner a patient who may be a "poor risk" can be taken through eight to twelve febrile treatments.

The various forms of paresis respond to malarial treatment with differing degrees of improvement. Gerstmann lists the different forms according to their response to therapy as follows: (1) Maniacal form, (2) mild dementia, (3) taboparetic, (4) cases with paralytic seizures, (5) infantile and juvenile form.

In general it may be said that the earlier the diagnosis of general paralysis is made, and the earlier the malarial treatment is instituted, the greater is the efficacy of the treatment and the better the prognosis. This rule is fundamental. It must be remembered that what is judged from the clinical point of view as being a beginning process has, from an anatomic point of view, been long established. It is a biologic fact that degenerated central nervous tissue can never be regenerated. Hence, it is unfair of the critics of this method to expect it to overcome a biologic law.

The percentage of remissions to be expected is dependent on the type of case treated. The best results are obtained when treatment is instituted during the initial stages of general paresis. According to Gerstmann 80 to 90 per cent remissions may be obtained in initial cases. Private cases seen early give better results than asylum patients seen late.

Among 1600 cases treated in Vienna, the following results were obtained: one-third of the patients had remissions with return of ability to pursue their former occupations; one-third had incomplete remissions with some improvement, and the remainder were uninfluenced by the treatment.

In meningovascular neurosyphilis malarial treatment is generally contraindicated because high temperatures are dangerous to vascular cases. It may be tried, however, if the patient is kept under strict observation, and the fever interrupted at the first sign of impending cardiac failure. In general malarial treatment should be reserved for syphilitic cases other than the interstitial type, unless all other methods have failed.

In latent syphilis and in cases of eight to twelve years standing that have received several courses of antiluetic treatment and still have a positive spinal fluid, malarial treatment is advised because such cases are potential candidates for the development of general paresis. The usual procedure is to give such cases an initial course of neosalvarsan, using a total of three or four grams. The malarial treatment is then given, consisting of eight to twelve paroxysms, followed by another course of neosalvarsan, three to four grams. If the patient cannot stand the neosalvarsan, it may be dispensed with, for most cases do well without it. The arsenicals, however, do have a good effect on the infiltrative pathology, and the patients gain in weight, due to the tonic effect of arsenic. It is often possible to establish a negative spinal fluid in latent lues by the malarial treatment, when such cases have been refractory to all previous treatments.

The same general principles apply in cases of tabes dorsalis as in general paresis. The initial stage offers the best prognosis; the infiltrative processes about the posterior roots respond to the malarial treatment; and the degenerative process in the posterior columns may be arrested. Lancinating and girdle pains, and gastric crises, if present, may be very severe during the treatment, but they completely disappear after the fevers are stopped. Ataxia and bladder symptoms may improve. Argyle-Robertson pupils, if present, usually remain. There is no doubt that in a certain percentage of cases the pathologic process may be arrested, and the patient may approach complete recovery.

CONDITION OF SPINAL FLUID AFTER MALARIAL TREATMENT

Briefly the results as reported by Gerstmann are as follows: In the first period of time after malarial treatment, a definite change in the cell count occurs independently of the clinical picture. The inflammatory reactions result, first, in a decreased cell count and general albumin content. The Wassermann of the fluid and its globulin content improve later. It may require one to two years before the fluid Wassermann, cell count, globulin and albumin have completely reached normal. Some cases, however, are observed in which there is little change in the fluid findings, and yet an excellent remission occurs. The reverse may also be seen occasionally.

In the beginning there is no parallel between the serologic findings and the remissions. If improvement takes place, however, a parallelism gradually develops between the clinical picture and the serologic findings. The Wassermann of the spinal fluid is the last to become negative. When a relapse occurs, the Wasserman and globulin are the first to again become positive.

In this connection Gertsmann states: "The pathologic reaction in liquor and serum is only a result of the pathologic process, and not a primary process in itself. We look at it as a mistake to overvalue the liquor in the spinal fluid or the serum as a prognosticator, as it is only a secondary result of tissue damage and will return to normal only when that damage is repaired. These reactions do not possess of themselves an independent dignity. In some of our cases, notwithstanding the occurrence of long remissions, we find a liquor ensemble that remains positive."

MALARIAL TREATMENT AS A PROPHYLACTIC

When it is considered how obscure are the beginning changes in the parenchyma of the brain, the conclusion that the malarial treatment might be used as a prophylactic against later meta- and paralues is natural. The reports of favorable results obtained in paretics treated during the early stages lead to the presumption that through the use of this method paresis might be avoided. It is a common experience to find that even the most intensive and careful antiluetic treatment grants no sure protection from a later paresis.

Syphilographers have observed for a long time that feverish disease may exert a curative effect on the different stages of lues. Many references to the complete disappearance of primary, secondary and tertiary lesions in consequence of erysipelas, scarlet fever, typhoid and pneumonia are to be found in the literature. Authors who have made such observations are Finger, Gartner, Strasser and Kryle.[7]

Kryle was the first to propose the systematic use of fever in connection with specific antiluetic treatment in early and latent lues. Before his death he used it in a wide scope of cases. This work is now being carried on in the Finger Clinic, where some 2,000 cases have been treated to date. Kryle was extremely enthusiastic, and claimed that there was no method that uniformly gave such good results, especially when used in the treatment of cases of latent lues with positive fluid findings that had been resistant to all the usual methods. While it is too early to definitely state what the ultimate statistics will prove, it would seem that the prevention of later meta- and paralues is possible through the use of this method.

THEORY OF MALARIAL TREATMENT

Mattauschek and Peloz[9] observed and reported the fates of 4134 luetic Austrian officers, who had been intensively treated by the military medical corps. They observed that of 241 who contracted an acute febrile disease, such as malaria, erysipelas, pneumonia, etc., during the first year after syphilitic infection, not one developed paresis. According to percentage statistics, nine to twelve cases of paresis should have developed.

They also found that among the cases that did develop paresis, not one had had an intercurrent infectious disease. Both authors were, therefore, of the opinion that the contraction of an intercurrent febrile disease following syphilitic infection diminishes the likelihood of paresis.

It does not give absolute assurance, of course, for there are the reported cases of Kirschbaum[9] in Hamburg of ten paretic seamen who gave the history of having had malarial fever after their specific infections. Such cases are also reported by others. However, as Gerstmann points out, it is necessary to know the duration and intensity of the intercurrent fever, if reliable conclusions are to be drawn. It is, of course, too much to expect that in all cases of intercurrent fever the desired results will follow.

Various authors have drawn attention to the fact that paresis and tabes are infrequent among the natives of tropical countries, where there is an extraordinary frequency of syphilis. Heinemann[10] reports that the Javanese, who have a high percentage of syphilis, do not contract paresis or tabes. Europeans, however, acquiring syphilis in that country later develop paresis and tabes in the usual percentage.

Similar reports are given for China by Bercowitz.[11] The figures of Kirschner and Van Loon[12] are most interesting. They report that of the Netherland Indians, among whom syphilis is known to be more or less endemic, admitted to the hospital during a certain length of time, only 2.9 per cent had paresis, whereas of the Europeans admitted during the same length of time the paresis rate was as high at 9.1 per cent. The authors explain that this great discrepancy in the percentages is due to the wide distribution of tropical fevers, especially malaria, among the natives. That fever plays an important role in the production of these results seems obvious, for it is known that spirochetes do not bear high temperatures well.

Weichbrodt,[13] during the course of his experiments, placed a syphilitic infected rabbit in an incubator at 42° C., and observed that this exposure to increased temperature resulted in a decrease in the number of spirochetes. When the length of the exposure was short, the remaining spirochetes increased in number. When the animal was subjected to the increased temperature several times, the spirochetes finally became no longer demonstrable by the darkfield method. Planer, in the Finger Clinic in Vienna, told the writer that he also had carried out such experiments with similar results. That fever has an important effect on syphilis is indicated by the reports of others. Jahnel[14] has reported that spirochetes cannot be found in the brain tissue of paretics who have had two or three days of high fever before death. Stückgold[14] reports the examination of a luetic child, who died as a result of bronchopneumonia, in whom spirochetes could not be found in the brain tissue.

While fever is no doubt an important factor, it alone does not seem sufficient to explain the results obtained, as Nonne and others have reported cases that obtained remissions in whom high temperatures were not obtained in the course of treatment.

Another experiment was carried out by Gerstmann in the Wagner-Jauregg Clinic. Fluid containing actively motile spirochetes was placed on a glass slide under the microscope, and spinal fluid from a malarial treated paretic was then brought into contact with it. Definite destruction of the spirochetes was observed to take place. He believes this demonstrates that some substances, produced as the result of high febrile reactions, have a definite spirocheticidal action.

The general observation has been made by dermatologists that syphilitics with sever skin and mucous membrane lesions usually do not develop central nervous system involvement, and that luetics with little or no skin or mucous membrane manifestations are prone to neurosyphilis. In tropical countries, where a high percentage of the population is luetic but receives no antiluetic treatment, it has been noted that the skin lesions of the disease are far more manifest than the neurologic ones.

In this connection, an interesting light is thrown on the treatment of general syphilis. It is in probable accord with this fact to assume that the production of antibodies during the secondary exanthema has an inhibitory effect on the later development of parasyphilis. Most paretics are known to have had little or no skin or mucous membrane lesions earlier in their infections. It would seem, therefore, that something capable of producing a natural resistance to the disease was lacking in the somatic system of those who develop paresis. For this reason, therefore, such persons are from the beginning predisposed to the development of paresis.

According to statistics from the Finger Clinic[15] it was found that during the florient stage of the disease, 50 per cent in treated cases and 80 per cent in the untreated have abnormal fluid findings. These findings are of an inflammatory rather than a biologic nature. The findings do not necessarily mean that the case will progress to metalues, for the pathology is found to regress in many with or without treatment. That is, a positive fluid with increase of cells, general albumin increase, and a weakly positive fluid Wassermann does not call for special attention to the nervous system in the early stages; later examination, after a course of intravenous treatment or after a variable time interval, may show a negative fluid syndrome.

A positive fluid will tend to regress toward negative during the early stages of syphilis, if the infected individual is capable of forming antibodies, and if this ability is not interfered with. That this is true would seem to be indicated by the fact that the exanthema automatically passes away during the early part of the disease. Therefore, if intensive antiluetic treatment is instituted during the early stages of the disease, thereby preventing the appearance of the secondary exanthema and the formation of the antibodies which are nature's greatest defense against the invading organism, the system is robbed of practically the only natural defense mechanism it possesses. Further, according to many observers, arsenic, administered in the usual way, is unable to pass the choroid plexus and endothelial capillaries, except perhaps in such minute traces as to be of no therapeutic importance; hence, the central nervous system is left unguarded. Intensive treatment, therefore, prevents antibody formation on the one hand and leaves the central nervous system entirely unguarded on the other, and, as a means of defense against the antiluetic treatment, the spirochetes retreat to the brain and spinal cord.

This theory would seem to furnish an excellent explanation of the development of meta- and paralues. Antibodies not only circulate with the blood but are also free to pass through the choroid plexus, thereby reaching the central nervous system. Certain individuals, however, either through a natural inability to form antibodies, or as a result of an inhibition of their antibody-forming abilities through intensive antiluetic treatment, are predisposed to central nervous system involvement, because their brain tissues have become defenceless ground, where the invading organisms meet no resistance. The probable truth of this theory is strongly indicated by the fact that in these days of early and intensive antisyphilitic treatment the number of cases with neurosyphilitic symptoms is increasing, whereas the cutaneous manifestations are becoming increasingly infrequent.

The final results obtained through the use of intensive antiluetic treatment do, of course, differ greatly, depending on the stage of the disease in which the treatment is begun. The indications for such treatment, therefore, differ according to the stage of the disease. If a case presents itself, for example, when the change first appears, before extensive glandular invasion has occurred, and before the development of a positive Wassermann, there is every possibility of an abortive treatment being successful. In such a case intensive treatment is definitely indicated because the patient will probably be cured and there is no need of concern for the central nervous system. This is not true, however, when the patient presents himself for treatment after the time limit when abortive treatment is possible. The body of such a patient is completely saturated with organisms, and intensive treatment is not indicated because it will inhibit antibody production, leave the nervous system unguarded, and thereby predispose such a patient toward the development of central nervous system involvement.

CONCLUSION

Paresis has always remained refractory, regardless of the treatment employed. For this reason it has been necessary to develop another form of treatment by which the individual is enabled to develop a defensive mechanism, consisting either of the toxic products formed during a high temperature, or the formation of antibodies, or a combination of these two.

BIBLIOGRAPHY

1. Enge: Salvarsanbehandlung der progressiven Paralyse Therap. Monats., 1916.

2. Boerhaave and Sydenham: From the Private Lectures of Privatdozent Dr. Josef. Gerstmann. Vienna, 1926.

3. Reil: Quoted by Weichbrodt. Die Malariabehandlung der progressiven Paralyse, von Gerstmann, page 5.

4. Gerstmann, Josef: Die Malariabehandlung der progressiven Paralyse. Vorwort. Julius Springer, Wien, 1925.

5. Ibid: Die Malariabehandlung der progressiven Paralyse, page 10.

6. Wagner-Jauregg, J.: Die Einwirkung der Malaria auf die progressive Paralyse. Psych. Neurol. Woch. Bd. 20, S., 132 U. S., 251:1918-1919.

7. Kryle, J., Fieber: Ein wesentlicher Heilfaktor in der Syphilistherapie. Wien. Klin. Woch. Nr. 22, 1927.

8. Mattaushek u. Pilcz Beitrag zur Luesparalysefrage (Erste Mitteilung uber 4134 katamnetisch verfolgte Fälle von luetischer Infektion. Zeitsch. f. d. ges. Neurol. u. Psych., Bd., 8, 1912); Zweite Mitteilung ueber 4134 katamnetisch verfolgte Fälle von luetischer Infektion. Zeitsch. f. d. ges. Neurol. u. Psych., Bd 15, 1913.

9. Kirschbaum, W., u. Kaltenbach, H.: Weitere Ergebnisse bei der Malariabehandlung der progressiven Paralyse. Zeitschr. f. d. ges. Neurol. u. Psych., Bd. 8, 1923.

10. Heinemann quoted by Gerstmann: Die Malariabehandlung der progressiven Paralyse, page 184.

11. Bercowitz: Neurosyphilis and Malaria in China. J. A. M. A., Vol. 82, p. 1713, May, 1924.

12. Kirschner, L., u. van Loon, H. F.: Zur. Malariabehandlung der progressiven Paralyse in den Tropen. Klin. Woch. Nr. 44, S. 2001, 1924.

13. Weichbrodt u. Jahnel: Einfluss hoher Körpertemperaturen auf die Spirochäten und Krankheitserscheinungen der Syphilis im Tierexperiment Dtsch. med. Woch. Nr. 18, 1919.

14. Gerstmann, Josef: Die Malariabehundlung der progressiven Paralyse, page 54.

15. Personal communication from Dr. Planner of the Finger Clinic.

SUBPHRENIC ABSCESS *

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Subphrenic abscess may be defined as an "abscess beneath the diaphragm and at contact with it at some point"[1] or, as stated by Winslow,[32] "the term subphrenic abscess is applied to any collection of pus situated immediately below and in contact with the diaphragm." Perhaps a better definition is that of Godlee, quoted by Heffenger,[4] "any collection of pus or pus and gas, the whole or any part of which intervenes between the diaphragm and the structures in contact with its lower surface." This should exclude pus in the liver or spleen.

The first reported case of subphrenic abscess was that of Veit in 1779, the abscess being situated between the diaphragm and the right lobe of the liver. The diagnosis was made at necropsy. The condition was practically unknown and supposed to be of great rarity before Barlow in 1845 made the first clinical diagnosis, confirmed at autopsy. Leyden in Germany wrote on the subject in 1880 and also made preautopsy diagnoses. The description given by these early writers was as follows:[3] "Above the liver dullness is found a tympanic zone which in turn is covered by a zone of dullness produced by a pleural exudate." Von Volkman in 1879 was the first to show that such abscesses could be treated surgically.[4]

In more recent years there has grown up quite a voluminous literature on the subject, including many presentations by various American authors.

PRECEDING PATHOLOGY

Subphrenic abscess is always a secondary condition. The conditions which may lead to it are many and varied. They may be divided into four general classes: (1) By more or less direct extension, (2) metastatic infection by way of the portal system, usually with primary liver abscesses, (3) as a result of focal infections or bacteremia, (4) as an extension of an empyema.

The first class, those which are due to more or less direct extension, includes by far the greatest number of these abscesses. Speaking generally, it is possible for any peritonitis (general or local) to cause an abscess under the diaphragm by following the cleavage lines of the peritoneal folds between the loops of intestines and reaching the spaces between the liver and the diaphragm on the left.[22] Anatomic considerations render some of these processes much more active than others.

There is much conflict of opinion as to the relative frequency of different sources of infection. The literature before 1910 seems to favor the view that the largest proportion of cases followed disease of the appendix.

Fagge[19] stated in 1909 he believed that about 50 per cent of all cases of subphrenic infection arose from appendicitis. However, in 1921 he had come to the conclusion that nearly 80 per cent were due to gastric or duodenal ulceration. He suggested that early operation for appendicitis and the adoption of the Fowler position in postoperative cases the great factors in reducing the percentage after disease of the appendix.

Harsha[28] in 1919 asserted that about nine out of ten cases arose from appendicitis.

Ross[5] reports that 0.8 per cent of 3,391 consecutive cases of acute appendicitis at the German Hospital in Philadelphia were followed by subphrenic abscess. He concludes from these and other statistics he has gathered, that (1) "subphrenic abscess following appendicitis is more common than is supposed," and (2) "it occurs in from 0.5 to 1 per cent of all cases of acute appendicitis."

The accompanying table shows the starting point in a series of 493 cases of subphrenic abscess.

	Perutz' Series	Maydl's Series	Korte's Series	Reported Cases Available	Total Percentage
Stomach	67	35	9	4	23.1
Duodenum	3	8	1	4	3.2
Appendix	55	25	27	18	25.3
Liver and bile passages	17	20	2	5	8.8
Hydatid	5	17	3	0	5.
Intestines	7	5	0	0	2.4
Pancreas	4	0	1	0	1.0
Spleen	4	0	5	1	2.0
Kidney	7	11	4	1	4.6
Ribs	1	3	2	0	1.3
Intrathoracic	9	9	4	2	4.9
Female generative organs	6	0	0	0	1.3
Traumatic	88	6	0	3	3.4
Mitastatic	5	11	0	6	4.4
Various and unknown	11	11	2	3	5.5
Total:	208	179	60	46	

Table 1. Illustrates sites of origin in 493 cases of subphrenic abscess.

The fourth column in the table consists of a number of scattered case reports collected from the literature. It does not include the thirty-one reported by Ross,[5] following appendiceal infection or many of the other reports, the originals of which are not available.

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* Senior Surgical Thesis, University of Oregon Medical School, Portland, Ore., 1925.

The discrepancy in the various opinions and series is probably the result of the different classes of patients in the various clinics and hospitals represented. It seems fairly safe, however, to conclude that about 25 per cent of the cases of subphrenic abscess are due to disease of the appendix and another 25 per cent have their origin in the stomach and duodenum. The origin of the other 50 per cent is scattering and includes a great variety of pathologic lesions, chiefly below the diaphragm.

Among the less common causes of subphrenic abscess may be mentioned the following: Tuberculous infections of the ribs or spine, infections of the kidneys, splenic infections secondary to infected emboli or trauma, pelvic suppurations including tubal infections, amebic and other ulcerations of the intestines, hydatid cysts, cholecystitis, suppurative hepatitis and liver abscess, empyema, pancreatitis and suppurations about the pancreas, lymphadinitis and suppuration of mesenteric lymph nodes, hematocele, bullet wounds, pericolic abscess, strains and contusions causing extravasations, furunculosis, childbirth, mediastinal abscess, focal infections and actinomycosis.

Subphrenic abscess may come on at any age when of appendiceal, tuberculous or traumatic origin, but usually occurs after forty when gastric ulcer is the cause. There is some evidence that it is less liable to follow appendicitis in children. Evans[2] has reported a case in a child five years old which apparently was due to a bacteremia in connection with furunculosis. Lockwood[24] saw one case in a patient eleven years old and Ross[5] one case in a girl aged ten, but the latter was the only one occurring in five hundred cases of appendicitis in children under nineteen. Lockwood had only one patient under twenty in a series of one hundred cases of subphrenic abscess, so the condition seems quite infrequent under fifteen. The maximum age incidence of all classes of cases is probably between twenty and thirty.

MECHANICS OF PRODUCTION

Although infection from the various sources mentioned above may spread through the lymphatics behind the peritoneum, along the peritoneum itself or through the ascending mesocolon, the chief cause is gravitation.

Concerning infection from the appendix, Bernard[38] says: "The recent investigations of surgeons in connection with the treatment of diffuse peritonitis have shown that the main cause of subphrenic accumulation is gravitation. As a patient lies flat on his back in bed, the posterior extremity of his subphrenic spaces is separated from the mattress by the skin, the ribs and the diaphragm, which together do not make any more than one-half inch of tissue thickness. The pouch of Douglas or the rectovesical pouch in the male in a similar way is separated from the mattress by the skin, the coccyx and the width of the flattened rectum. Between these two dependent pouches, the thick muscles and tissues of the loins with the kidneys and the perinephritic fat rise as two elevated mounds.

"Where the general peritoneum is infected, a profuse flow of serum is poured out and this gravitates upward into the subphrenic spaces and downwards into the pelvic pouch. If the patient is well propped up on pillows or is supported by an efficient bed rest (Fowler's position), fluid will run from beneath the diaphragm over the loin mound into the pelvic pouch, from which it may be drawn off by a tube passed to the bottom of that fossa from a puncture above the pubes. This method is effective in preventing subphrenic abscess only while the exudate is diffused. When it is shut in and localized, special measures must be adopted to evacuate it."

Coffey[37] has shown that either flank holds more fluid than the pelvis, when the patient lies flat on his back, and that the body must be elevated to an angle of sixty or seventy degrees to drain the fluid from the flank into the pelvis; and Coughlin[39] that the pelvic cavity could not be completely drained of water by raising a cadaver to ninety degrees. He has shown that a lateral position, with the upper part of the body raised to about thirty degrees with a pillow under the body above the iliac crest, will permit quite efficient drainage. The position of the appendix is the main factor in deciding whether a pelvic or a subphrenic abscess will develop in many cases. When the appendix lies high, behind the colon and is retrocecal or retroperitoneal, subphrenic abscess is more liable to result.

The work quoted above illustrates the most common way of extension to the subdiaphragmatic spaces by gravitation. Other and less common modes of infection are: (1) Lymphatic extension up the right retroperitoneal cellular tissue or by the lymphatics around the deep epigastric artery to the falciform ligament; (2) through the medium of the portal vein, usually from liver abscesses or suppurative pylephlebitis. Cases due to amebic abscess of the liver, while not common, are not rare; (3) through the diaphragm as an extension of an empyema or a tuberculous process in the rib or spine.

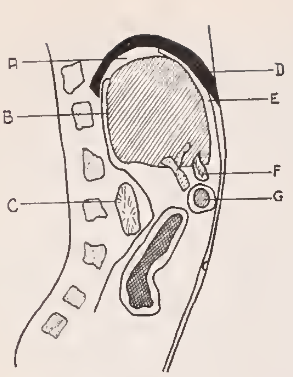

Fig. 1.

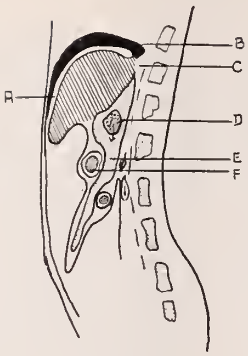

Fig. 2.

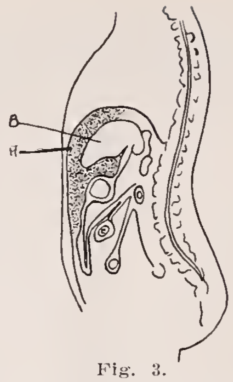

Fig. 3.

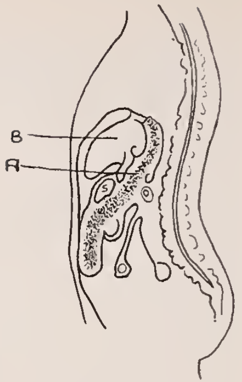

Fig. 4.

Fig. 1. Diagram of a vertical section through the body to the right of the midline, showing the right subphrenic spaces (after Clendening). (A) Right extraperitoneal subphrenic space. (B) Right posterior intraperitoneal subphrenic space. (C) Right kidney. (D) Diaphragm. (E) Right anterior intraperitoneal subphrenic space. (F) Gallbladder. (G) Stomach.

Fig. 2. Diagram of a vertical section through the body to the left of the midline, showing the left subphrenic spaces (after Clendening). (A) Left anterior intraperitoneal subphrenic space. (B) Diaphragm. (C) Extraperitoneal space. (D) Foramen of Winslow. (E) Lesser peritoneal cavity. (F) Stomach.

Fig. 3. Subphrenic abscess in front of the liver (after Moynihan). (A) Abscess. (B) Liver.

Fig. 4. Subphrenic abscess in the lesser sac (after Moynihan). (A) Abscess. (B) Liver.

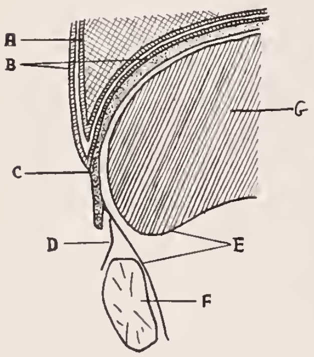

Fig. 5.

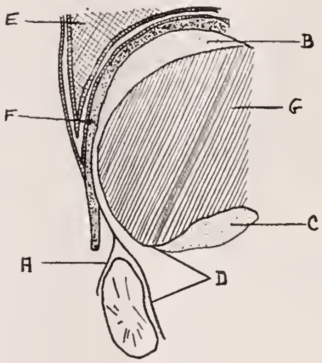

Fig. 6.

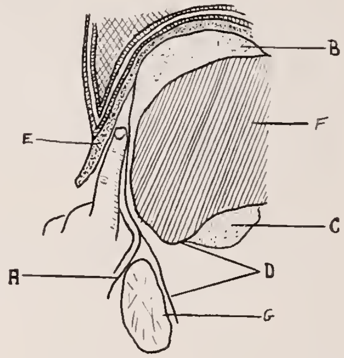

Fig. 7.

Fig. 5. Schematic anteroposterior section, showing normal relations of the right subphrenic region (after Nather and Ochsner). (A) Visceral pleura. (B) Parietal pleura. (C) Diaphragm. (D) Renal fascia. (E) Peritoneum. (F) Right kidney. (G) Liver.

Fig. 6. Schematic representation of a suprahepatic and a subhepatic abscess. The normal potential suprahepatic space is filled with pus. The diaphragm and lower lung border are pushed upward and the pleural angle is partly obliterated. (A) Renal fascia. (B) Pus pocket of suprahepatic abscess. (C) Pus pocket of subhepatic abscess. (D) Peritoneum. (E) Lung. (F) Diaphragm. (G) Liver.

Fig. 7. Schematic drawing of operation of Nathan and Ochsner, showing the separation of the peritoneum from the under surface of the diaphragm as far as the abscess (after Nathan and Ochsner). (A) Renal fascia. (B) Suprahepatic abscess. (C) Subhepatic abscess. (D) Peritoneum. (E) Diaphragm. (F) Liver. (G) Right kidney.

BACTERIOLOGY

As subphrenic abscess is always a secondary disease, its bacteriology is that of the causal condition. Cases resulting from appendicitis usually show colon bacilli and streptococci; those from the intestines B. coli or ameba; from hydatids, echinococus; from duodenum, the liver and its ducts, the kidneys, the spleen and wounds, mixed infections (usually of streptococci or staphylococci with an admixture of B. coli); from the ribs and spine, the tubercle bacillus; and from the thorax, the pneumococcus or tubercle bacillus.

Douglas[29] has reported a case due to actinomycosis. With a perforation anywhere along the gastrointestinal tract, there is usually the escape of some air or gas. This may be but a small quantity and the large amounts of gas often found in subphrenic abscess are largely the result of gas-forming anaerobic bacteria, such as the colon bacillus, B. Welchi, etc.

TYPES OF ABSCESS

The classification of subphrenic abscess usually followed is that of Bernard.[38] He divides all subphrenic abscesses according to their position as regards the falciform and lateral ligaments of the liver as follows:

A. *Intraperitoneal.* 1. Right. (a) Anterior: This is an abscess situated between the upper surface of the right lobe of the liver and the diaphragm. (b) Posterior: This is an abscess in the subhepatic pouch, a pyramidal space bounded laterally by the abdominal parieties, in front of the liver and gallbladder, posteriorly by the abdominal parieties and having its apex formed by the upward slope of the margin of the left lobe of the liver. 2. Left. (a) Anterior: A left anterior intraperitoneal subphrenic abscess or perisplenic abscess lies in the fossa bounded by the diaphragm above, the left lobe of the liver below and to the right and the spleen to the left. It is bounded sharply to the right by the falciform ligament. (b)

Posterior: This is an abscess situated in the lesser peritoneal cavity.

B. *Extraperitoneal.* (a) Right: This abscess is one in the cellular space between the layers of the coronary and other peritoneal ligaments of the liver. (b) Left: An abscess formed in the retroperitoneal cellular tissue of the left loin.

An extraperitoneal subphrenic abscess does not extend over the diaphragm except at those sites where it is free from peritoneum, between the ligamentous folds of the liver. The remainder of the peritoneal covering of the diaphragm is too closely adherent to allow its free dissection by pus. There is some question as to whether they can be so sharply subdivided. Fagge[19] questions the existence of a true extraperitoneal abscess, arising primarily from an infective process in one of the abdominal viscera, if those be excepted which arise after gunshot wounds and those from liver abscesses or similar conditions. He says he can recall but one case on which he has operated, in which there was finally any real doubt that it began as an intraperitoneal collection.

Ross[5] finds it impossible to separate all the anatomic types and divides them all into right and left, anterior and posterior. He states that it is often impossible to determine the intraperitoneal or extraperitoneal origin.

Heffenger[4] (after Godlee) divides subphrenic collections of pus into three zones: (1) Hepatophrenic, (2) hepatogastrophrenic, (3) perisplenic.

According to Heffenger[4] right-sided abscesses are usually due to infection from the appendix, cecum, colon, right spine, pleura, pelvis and portal circulation or from trauma. Those on the left side are usually from the stomach, duodenum, spleen, left kidney, intestines, ribs and spine, pleura or trauma.

In the series of thirty-one cases collected by Ross[5] at the German Hospital of Philadelphia twenty-nine were on the right side only, one was on both the right and left sides and one was on the left side only. These cases were of appendiceal origin. Barnes'[5] twelve cases were practically all on the right side. Left posterior intraperitoneal subphrenic abscess frequently follows perforation of a gastric ulcer into the lesser peritoneal sac.

It is usually impossible to make a definite diagnosis of the type of subphrenic abscess previous to operation. Indeed, the diagnosis of the very existence of subphrenic abscess is often very difficult.

SYMTOMATOLOGY

The symptoms of subphrenic abscess vary according to the location of the abscess and the primary disease. As Douglas[4] says, "there is no one symptom or set of symptoms constantly present and pathognomonic of subphrenic abscess. The existence as extra- and intraperitoneal collections of pus, the development upon the one side or the other or upon both, the presence or absence of gas, are conditions giving rise to varied symptomatic features."

In addition to the above complicating factors, subphrenic abscess may come on suddenly out of a clear sky as a result of focal or embolic infections. It may follow acute abdominal symptoms from acute appendicitis or the rupture of a gastric or duodenal ulcer or develop slowly and insidiously from tuberculous foci in the ribs or vertebræ. It may come on as a postoperative complication, perhaps in a patient already so septic that there is no rise of temperature or increased leukocytosis. Thus the already confused picture may be twice confounded.

The onset may be insidious or sudden and severe, depending on the mode of infection, its situation and the rapidity of invasion. Bernard[38] states that all of his twenty cases had an acute onset, but this apparently refers only to the onset of local symptoms and of marked sepsis. Most cases, in which the onset of pleural or abdominal pain, high fever and delirium is sudden, are preceded by septic temperature and rather indefinite malaise.

Perhaps the most common onset is that in which, after some operative procedure in the abdomen, the patient seems to be convalescing fairly well and the first sign of approaching trouble is a steadily rising daily fever with no local evidence of its cause. There may be chills and sweats with the daily rise in temperature. According to Lapsen,[36] however, the temperature in some cases may be only moderately elevated and the pulse nearly normal.

The patient loses ground rapidly. There is usually anorexia. Loss of weight is rapid and he looks septic and very ill. There is a sense of fullness or discomfort in the epigastric region and he may be unable to take a deep breath. Hiccough is a very common symptom. There is usually some cough, and pain on deep breathing is frequent in the early stages of the disease due to the presence of a diaphragmatic pleurisy. There is usually pain localized to the area of the infection but not definitely confined to a given area. Later there is deep tenderness over the same area.

Often the pain complained of is due to the attending pleurisy. In some cases the onset is such that a pleurisy seems to develop before there are any signs that can be referred to the subphrenic region. In some cases there are shooting pains behind the shoulders. There may be delirium. There is frequently considerable gastric distress with belching of gas and some eructations. Constipation is sometimes marked; diarrhea is uncommon.

Occasionally the onset is much more acute. This is especially likely to occur when there is perforation of the stomach or duodenum, suddenly flooding the subphrenic area with irritating material. The initial shock and collapse are here due to the perforation. The outcome may be a generalized peritonitis or a subphrenic abscess with symptoms as above.

Cases long delayed are also prone to start with severe symptoms, due to the sudden awakening of a long-latent infectious process in the abdomen. Ross[5] reports one case suddenly breaking forth a year after a primary appendiceal infection. He cites a case of Ashurst's, where the interval was four months, and one reported by Meisel which undoubtedly occurred one and one-half years after a primary appendicitis.

Cases due to distant foci of infection and those in children also tend to a sudden and strong onset. The subsequent symptomatology in these cases with acute onset is much like that where the onset is insidious. Cases originating in tuberculous processes of the ribs or pleura may give no symptoms truly attributable to the subphrenic abscess and separable from those of the primary conditions until the mass either causes embarrassment of the diaphragm or points externally.

PHYSICAL SIGNS

The physical signs of subphrenic abscess will vary both with the situation and the type of abscess. There are two types, one containing fluid (pus) alone, the other containing both pus and gas.

Gas occurs in the abscess cavity in about half of the left-sided cases, whether or not there has been perforation of a hollow viscus, and but rarely in right-sided abscess. This seems to show that in the majority of cases the gas is dependent upon the presence of gas-forming bacilli, either the bacillus aerogenes capsulatus of Welch or the bacillus pericoli aerogenes or other gas formers from the gastrointestinal tract. Gruneisen[4] found gas five times in twenty-seven abscesses due to appendicitis, where there was no perforation. However, there seems no doubt that the air or gas in a hollow viscus may at times be responsible for the gas present in an abscess cavity.

On inspection there may be found on the affected side a rounding out of the lower part of the thorax which does not take part naturally in breathing. Litten's diaphragm phenomenon will be absent on that side. An inflammatory edema of the loin or lower part of the thorax may be seen. This latter sign is more frequent in the retroperitoneal than in the intraperitoneal type.

The true condition of the lung and pleural space above a subphrenic abscess is at times most difficult of exact determination. The dullness and changes in the resonance and fremitus may be accounted for by the pressure upward on the vault of the diaphragm. On the other hand, pleuritic effusion may become marked and be followed by empyema.

The pleura may be infected from below the diaphragm by continuity or contiguity. Ross[5] reports extensions to the lung in six out of thirty-one cases due to appendicitis. In many cases a subphrenic abscess ruptures the diaphragm and penetrates the pleural cavity. Madyl reports perforation of the diaphragm in 65 out of 179 cases, and Lang in 67 out of 163. Perforation is particularly liable to occur in cases which are not diagnosed early. Infectious pleuritis may occur without perforation of the diaphragm. Maydl reports this in 14 out of 25 cases, Sachs 22 out of 41 cases, and Gruneisen 17 out of 27 cases.[4] Ross[5] does not deem these extensions so frequent as the above figures would indicate, as out of twenty-one fatal cases coming to necropsy but five showed a purulent pleurisy, and one was nonpurulent. Two out of his five cases of purulent pleurisy showed actual perforation of the diaphragm.

On the other hand, a basic empyema may infect the subphrenic spaces, with or without perforation of the diaphragm. There may at times be a definite bulging out and pointing over the abscess cavity. Indeed, actual perforation of the abdominal parieties and evacuation of the abscess is not unknown.

Palpation, besides usually showing tenderness and often a bulging over the abscess cavity, will at times show a definite mass formed by the abscess itself. Bernard[38] found this in thirty-three out of seventy-seven cases. These cases included all types of abscess. Ross[5] states that in his experience with abscesses of appendiceal origin, the proportion of cases in which there was an abdominal swelling or a mass has been considerably less. He suggests this may be due to the fact that infection is oftenest by direct extension along the lumbar fossa in these cases, and the abscess is usually found deep under the liver, or else above it and between the upper liver surface and the vault of the diaphragm.

On percussion the findings will vary with the presence or absence of gas and the location of the abscess. There will be found flatness over the lower chest in front and in back, if the abscess contains pus alone. The dullness may extend anteriorly as high as the second rib, and posteriorly to the middle of the scapula. Often the line of percussion dullness will descend quite markedly on deep inspiration. Reeve[15] says that the liver and abscess dullness may be distinguished at times by the fact that the former is distinctly lessened by the knee-elbow or prone position. An abscess on the right side will cause a much depressed liver border with the upper border of liver dullness much increased upward. In typical cases the upper border of the area of dullness will be convex upward. If there is no intrapleural fluid, the lung resonance will be found normal above the level of dullness. There is the same grouping of zones when the abscess is on the left side.

When gas is present and there exists an empyema or pleuritic effusion, the signs on percussion become more complicated. From above downward there are four zones; first, a zone of lung resonance; second, a zone of flatness due to the pleural exudate; third, a zone of tympany due to the gas bubble; and, fourth, the liver dullness, together with that of the pus.

On auscultation there will be found absent breath sounds and absent vocal fremitus up to the limit of dullness. Above this level vocal fremitus may be slightly increased for a short distance, due to compression of the lung by the high diaphragm. A pleuritic friction rub may be heard at times over a pleural effusion but this is not constant. Rales may be heard in the lung bases, even quite early. When there is gas in the abscess cavity, a succussion splash may be obtained by shaking the patient.

In cases due to chronic perforation of the stomach, Mayo-Robson (Keen's Surgery, 15, Vol. III, 1908) has at times found the following sign, in some cases confirmed at operation: "On placing a stethoscope over the eighth intercostal space, which region was dull on percussion, and on placing a coin over the stomach and percussing it with another coin, the sound was distinctly conveyed through the whole of the abscess cavity, and through the stethoscope to the ear."

A well-marked *leukocytosis* is usually present, but in certain chronic cases there may be a leucopenia. The count usually varies between 12,000 and 40,000. Those abscesses, usually tuberculous in character, which originate in disease of the ribs or spine, may be very obscure. They develop on the back wall of the thorax and may escape detection for a long time. In many cases they present only the signs of a small pleuritic effusion, and where they are accompanied by such, it is almost impossible to demonstrate their presence.

Information obtained by *aspiration* is of the greatest importance, and this should be done as soon as there is the least suspicion of pus under the diaphragm. It can be done painlessly and very thoroughly under general anesthesia, as recommended by Bernard[38] or almost painlessly under local anesthesia as recommended by Ross.[5]

A large sized needle is needed, as the pus is often viscid and refuses to flow through a small one. A fibrinous exudate on the diaphragmatic pleura or peritoneum may clog the needle. According to Heffenger[4] the needle should be first inserted between the seventh and eighth ribs in the midaxillary line, and directed forward and downward. As it passes through the pleura clear fluid or pus may be found, and further down the resistance of the diaphragm is felt. As the diaphragm is pierced, pus or gas from the subphrenic abscess escapes. Clute[9] says that sterile fluid followed by pus at the same tap is almost pathognomonic of subphrenic abscess. The odor of the pus may be tested. The typical fecal odor of a B. coli infection gives valuable evidence of the source of the infection.

Should no pus escape from the needle, it may be in a gaseous cavity, and placing the handle of the needle under sterile water may show the escape of bubbles of gas. If a dirty bloody fluid containing shreds of red tissue is withdrawn, an hepatic abscess has been entered. If nothing is found after pushing the needle in several directions, it should be withdrawn and washed with sterile water for a culture.

Another method is to insert the needle under the tenth rib and push it upward and inward, changing the angle of the needle in an attempt to find pus. There is some slight danger of perforating a hollow viscus by this method. It is best to be prepared to operate at once if pus is found, even though the patient's condition is not good, for life in most of these cases is directly dependent upon evacuation of the pus and free drainage.

In the majority of cases the most positive findings are by the x-ray and very often the final diagnosis between a subphrenic abscess, a pyothorax and a pyopneumothorax can be made only by this means. Hodges[32] declares that, if there is a large collection of fluid in the pleura and no gas in the abscess below the diaphragm, the x-ray is of little value in the diagnosis, since the position of the diaphragm canont be determined till after the pleura has been drained. An empyema of this character would be drained in any event, however.

According to Clute,[9] the right diaphragm is normally one-fourth to one-half inch higher than the left. Any inequality or fixing of its movements is pathologic. In subphrenic abscess the diaphragm on the affected side is raised and fixed. It does not move with respiration to any degree. The lung above the fixed diaphragm is compressed. The level of the diaphragm may be only slightly raised, or it may extend up to the second or third rib. If there is no pleuritic effusion, the costophrenic angle is not obliterated. The line of the diaphragm is smooth, with a regular curve involving the entire affected side. In liver tumors, liver abscesses and adhesions from an old pleurisy the curve is more irregular and and limited more sharply to some particular area of the diaphragm. "A high, fixed diaphragm with a persisting costophrenic angle is very typical of subphrenic abscess."

Friend[14] suggests inflation of the colon with air as an aid to determining the extraperitoneal location of the abscess. Sommer[33] advises the withdrawal of 30 c.c. of the fluid, and its replacement by air when the abscess does not contain gas, as by this method the shifting of the position of the air bubble to the highest point as the body is moved and twisted allows exact localization and shows the best means of access. This is of doubtful value in most cases, and would prove quite impractical in the presence of the thick, cheezy pus sometimes found.

COMPLICATIONS

Since subphrenic abscess is itself a complication of some other condition, it is always associated either with the primary condition, or with its residue. The abscess itself may have certain complications, however. Nather[40] warns against overlooking an insidious spread of the infection to other spaces than that in which it is first found. Thus, a right-sided abscess may become associated with one on the left side. Burrowing of the abscess into the liver substance and acute hepatitis sometimes occur, but it is more usual for a liver abscess to break through and infect the subphrenic spaces.

Occasionally one of these abscesses will break through into a hollow viscus or penetrate to the exterior of the body. This complication is more often favorable than the reverse, and a few cases have been reported which cleaned up under the drainage thus established.

By far the most frequent complication is a pleural effusion, or more commonly an empyema. This may occur with or without perforation of the diaphragm. Cases have been reported in which a subphrenic abscess broke through the diaphragm, causing an empyema, which in turn established communication with a bronchus and drained in this fashion. This is particularly liable to occur when the abscess penetrates the diaphragm at the site of an old adhesion. Rarely there may be a pericardial complication similar to those of the pleura. Perforation may take place into the general peritoneal cavity and set up a diffuse peritonitis. Metastases may occur to the kidneys, lungs, brain, etc., as in the case of any other abscess.

DIFFERENTIAL DIAGNOSIS

Diagnosis of these cases may be very difficult. According to Lockwood's statistics, out of one hundred thirteen cases at the Mayo Clinic thirty-one were found only at autopsy.

The greatest difficulty in diagnosis is between a subphrenic abscess and empyema. The two conditions are often associated. The history of an abdominal operation, the upward convex cupping of the diaphragm, the x-ray and aspiration findings will all assist in the diagnosis. The heart is not displaced as it often is in empyema. The diagnosis may be in doubt in some cases up to the time of operation.

When there is considerable gas in the abscess cavity it may closely simulate a pneumothorax or pyopneumonthorax. The limitation of the tympany to the lower part of the chest, the lack of abrupt cessation of breath sounds and the bulging upward of the diaphragm, together with the inability to cause a variation in the upper border of the tympanitic zone by shifting the position of the patient, should lead to a suspicion of the true condition. The history should also be of aid. Abscess of the liver, cyst, large tumor of the kidney and perinephritic abscess may usually be ruled out by the clinical history, physical findings and laboratory findings.

Douglas[29] summarizes some of the factors which lead to confusion in the diagnosis between empyema and subphrenic abscess as follows:

1. "The fluid is not evenly distributed between the liver and the diaphragm, but being localized in a small area raises the diaphragm in a conical manner and is overlapped anteriorly, posteriorly or laterally by lung tissue."

2. "In the same manner, gas occupying the upper part of such an area is overlapped by lung tissue, or lies partly behind or in front of the solid liver."

3. "With a large accumulation of fluid pushing the diaphragm upward, the physical signs over the

lung above are not those found over a normal lung but those of compression, and closely resemble the physical signs of pneumonia or fluid in the pleural cavity."

4. "The air or gas in the cavity may be so small in amount that it causes no zone of hyperresonance, but it may be just enough to mask the flatness or dullness."

5. "A marked amount of postoperative abdominal distension may push up the diaphragm sufficiently to cause all the physical signs of a subphrenic abscess."

6. "The usual physical signs closely resemble a pleurisy with effusion or empyema, and injudicious exploration with an aspirating needle may enter the subdiaphragmatic abscess and on withdrawal infect the pleura. Then the original lesion is masked by the empyema or pyopneumothorax which develops."

PROGNOSIS

The prognosis is always grave, though it varies with the source of infection, location of abscesses and time of operation. Death is usually due to sepsis. Resolution occasionally occurs, especially in tuberculous abscesses, but is very uncommon. It is possible for these abscesses to heal spontaneously through perforation into a hollow viscus or externally, but this is a very uncommon outcome and the mortality in cases not operated on is from 55 to 90 per cent. Fulminant cases may die in a day or two, or even a few hours, while those due to slow absorption may last for weeks or months. According to the statistics of Sachs, the mortality was 13.5 per cent in cases operated on within three weeks, and 50 per cent in those operated on later. Maydl places the general mortality at 56 per cent and Elsberg at 40 per cent. With operation the mortality was placed by Maydl at 35.7 per cent; by Gruneisen at 33.5 per cent; by Sonnenberg at 42 per cent; by Sachs at 37.5 per cent and by Elsberg at 22 per cent. Without operation Sonnenberg puts the mortality at 55.5 per cent; Sachs at 71.5 per cent; Elsberg at 82 per cent.

Of one hundred seventy-six cases reported on by Lang, 47.9 per cent recovered after operation and 12.3 per cent without it. Of thirty-one cases due to appendicitis reported by Ross twenty-two died. Of these thirteen had been diagnosed and operated on, and in nine the diagnosis was made at necropsy.

TREATMENT

Subphrenic abscesses when first seen by the surgeon are usually well developed and large pockets of pus are generally found. Immediate evacuation of these pus pockets with free drainage is demanded. After this is accomplished the next step should be to search out and remove the original cause, if this has not already been done previous to the discovery of the abscess. Distant pus pockets, due to extensions from the original or secondary pus foci may be present at any point from the lungs to the pelvis, and these must be found and drained before recovery will take place.

A subphrenic abscess may be reached from above the diaphragm or below it, depending on its location and point of most prominent presentation. Abscesses on the left side will usually have to be first approached from in front. If the left posterior space is found to contain pus, a second incision should be made and the abscess be entered from the rear (Clute).[9]

Collections of pus on the right side are drained either from below the rib margins, by incision between the lower ribs, or by the resection of portions of one or more ribs. Great care must be taken not to infect the pleura, if it is not already involved, as an empyema, superimposed on the primary condition, will be very liable to prove fatal to a patient already so desperately ill.

The incisions usually used for subphrenic abscess are:

1. *Epigastric,* through the anterior abdominal wall. This is used in those large bulging abscesses which usually are due to gastric perforation. It should be large enough to permit free exploration in case the abscess is not found at once. After the abscess is found and evacuated it should be always explored for deep pockets, which usually exist and may necessitate a counterincision lower down. Tubal or gauze drainage or both may be used, according to the indications.

2. *Along the costal border.* The incision should be about four inches long, and carried through to the peritoneum. Then blunt dissection with the finger is made till pus is reached, when the cavity is opened and excavated and the limits of the abscess determined. Tubal drainage is used. This incision is particularly useful when the abscess is believed to be extraperitoneal.

3. *Transpleural* route through the chest wall and diaphragm by the technic of Elsberg. A four-inch incision is made over the ninth and tenth ribs on the right side or over the seventh and eighth ribs on the left side, with the center of the incision as nearly as possible over the place from which pus has been drawn or practically in the axillary line. About two inches of the ribs are resected and the

pleural cavity is inspected. If it is healthy or contains only clear fluid, it is protected by stitching together the diaphragm and the chest wall and by gauze packing. Unless the diaphragm bulges markedly upward, an assistant pushes the liver well up. The diaphragm is seized with forceps and incised, the pus found and evacuated, the limits of the abscess determined, and counterdrainage established if deemed advisable. Tubal or gauze drainage is used, preferably the former.

4. *Moynihan's Combined Thoracic and Abdominal Incision.*[7] A thoracic incision is carried on to the abdomen, and the cavity above the liver is freely opened. An abundant gauze pack is introduced and frequently changed.

5. *Lannelongue's Incision Through the Loin.* The eleventh and twelfth ribs are resected in this operation and the pleura is pushed up by blunt dissection until the pus cavity is reached. This is emptied and tubal drainage established.

6. *Lund's Incision Through the Back.* An incision is made behind the angle between the twelfth rib and the vertebral column, and the fingers are pushed up through the perirenal fat until the abscess is reached and drained. He uses this incision in all right-sided cases, where the pus is not actually on top of the liver. It is especially good in extraperitoneal abscesses. Where the pus is actually on top of the liver he considers the transpleural incision best.

7. *Cantlies' operation* of aspiration with trocar and tubal drainage. The abscess is first located by aspiration, and a large trocar and canula is substituted for the needle. A rubber tube is then pushed through the canula, which is held in place as the canula is withdrawn. The tube is stitched to the skin and siphon drainage instituted.

8. *The retroperitoneal method* of Nather and Ochsner.[3] This consists of an incision over the twelfth rib to within 4 cm. of the midline posteriorly, and subperiosteal resection of the entire twelfth rib. A transverse incision is made through the muscles at the level of the first lumbar spinous process in order to avoid the pleura. Dissection is made down to the renal fascia. The retrocecal and retroperitoneal regions can be explored by extending the incision downward. The muscle is separated from the renal fascia and held by broad dull retractors. By blunt dissection with a finger the peritoneum is separated from the diaphragm. The peritoneum is continuous with the renal fascia. Aspiration of the pleural cavity should now be performed in those cases where an empyema is suspected. The subhepatic space is now explored with an aspirating needle. If pus is found the peritoneum is not opened at this time. The suprahepatic space, particularly the right upper posterior, is now explored with a curved needle. If pus is found, the cavity is opened by breaking through the peritoneum with the finger. If any subhepatic pus has been found, it also is drained. Large rubber drainage tubes and iodoform gauze drains are inserted. If an empyema is present, it is drained by rubber tubes by incision of the pleura above the diaphragm without the resection of additional ribs. The above operation seems to present a number of points of advantage over those previously proposed and has few disadvantages except the somewhat increased technical difficulties.

9. Douglas[29] suggests resection of the tenth rib in the posterior axillary line under local anesthesia. The pleura is then carefully pushed upward and the costophrenic space entered. A large aspirating needle is then pushed through the diaphragm, the pus located and a small opening made in the diaphragm which is enlarged by stretching so that a large rubber tube may be introduced. If the pleura is accidentally opened and contains no fluid, it is closed and the wound packed with gauze for twenty-four to forty-eight hours to allow adhesions to wall off the pleural cavity before going through the diaphragm into the abscess. If empyema is already present, the pleura may be drained in the usual way by the resection of the seventh or eighth rib, and the subphrenic abscess reached by resection of the tenth rib in a different line, or else both the pleura and subphrenic space may be drained through the same incision, the latter being opened twenty-four hours or more after the former.

10. Clute[9] prefers a two-stage operation, the second under local anesthesia. He resects a part of the tenth rib in the midaxillary line, opens the pleura and sutures the parietal and diaphragmatic pleura together. Sterile vaseline is put into the wound and a dry sterile dressing applied. Forty-eight hours later, under local anesthesia, an incision is made in the diaphragm parallel to that in the parietal pleura. The edges are retracted and a finger inserted in search of pus. A large rubber tube is inserted and held in place with a suture through the skin or fascia.

Earlier workers have usually preferred the one-stage transpleural method of approach. However, owing to the danger of infecting a clean pleura, more recent workers prefer some such method as that of Nather and Ochsner, or that of Douglas, where the pleura is not opened unless empyema is discovered, or the two-stage operation of Clute or some modification of it, where time is given for pleural adhesions to minimize the danger.

Whatever method of approach be selected, it is advisable to continue tube drainage for a week or more in large sized abscesses, and to replace the tube gradually with rubber dam. Too hasty withdrawal of the tube may result in a secondary local collection of pus.

SUMMARY

Subphrenic abscess, while not a frequent, is by no means a rare complication of sepsis in the abdominal cavity or even of empyema.

Its presence should be considered whenever a patient does not do well and shows signs of obscure sepsis after any abdominal operation or perforation of any hollow viscus.

If subphrenic abscess be suspected at all, no effort should be spared to confirm the diagnosis, as it is a very fatal complication unless operated upon reasonably early.

Where possible an operation should be selected in which the pleural cavity is not opened or is protected from infection, and which will secure adequate drainage.

BIBLIOGRAPHY

1. Freeman, L.: Article on Suppuration, Abscess and Fistula. Keen's Surg., Vol. I, 1912.

2. Evans, M.: Subphrenic Abscess. Ky. Med. Jour., Vol. XXII, No. 9, Sept., 1924.

3. Nathan, Carl, and Ochsner, E. W. A.: Retroperitoneal Operation for Subphrenic Abscess. S., G. & O., Vol. XXXVII, No. 5, Nov., 1923.

4. Heffenger, A. C.: Subphrenic Abscess. Boston Med. and Surg. Jour., Vol. CLXVII, No. 13, Sept. 26, 1912.

5. Ross, G. G.: Subphrenic Abscess the Result of Acute Inflammation of the Vermiform Appendix. J. A. M. A., Vol. LVII, No. 7, Aug. 12, 1911.

6. Phillips, John.: Subphrenic Abscess. Surg. Clin. of N. A., Vol. IV, No. 4, Aug., 1924.

7. Moynihan, B. G. A.: Abdominal Operations, 1905.

8. Haribold, H. A.: Principles and Practice of Surgery, Vol. II, 1922.

9. Clute, H. M.: Subphrenic Abscess. Boston Med. and Surg. Jour., Vol. CLXXXVII, No. 20, Nov. 16, 1923.

10. Bernard, H. L.: Surgical Aspects of Subphrenic Abscess. Brit. Med. Jour., 1908, Vol. I.

11. Haggard, W. D.: Subdiaphragmatic Abscess. Surg. Clin. of N. A., Vol. II, No. 5.

12. Johnson, A. B.: Surgical Diagnosis, Vol. I, 1907.

13. Winslow, Randolph: Subphrenic Abscess. Ann. Surg., Dec. 16, 1920.

14. Friend, E.: Subdiaphragmatic or Phrenic Abscess. G. & O., Vol. XXVII, No. 5, Nov., 1918.

15. Reeve, C. R., Jr.: American Practice of Surgery, Vol. VII, 1907.

16. McCosh, A. J.: American Practice of Surgery, Vol. VII, 1907.

18. Despard, D. L.: Subdiaphragmatic Abscess. Ann. Surg., Vol. LXIII, Sept., 1913.

19. Fagge, C. H.: Subphrenic Abscess. The Lancet, Vol. CC, No. 12 of Vol. I, 1921, Mar. 19, 1921.

20. Fisher, T.: The Aetiology of Subphrenic Abscess. The Lancet, Vol. CC, No. 17 of Vol. I, 1921, Apr. 23, 1921.

21. Skillern, P. G., Jr.: Surg. Clin. of J. B. Deaver. Internat. Clin., 24th Series, Vol. III.

22. Clendening, L.: Subphrenic Infection. Med. Clin. N. A., Vol. VII, No. 4, Jan., 1924.

23. Lee, R. I.: Subdiaphragmatic Inflammation. J. A. M. A., 1911, Vol. LVII, No. 7.

24. Lockwood, A. L.: Subdiaphragmatic Abscess. S., G. & O., Nov., 1921, Vol. XXXIII, No. 5.

25. Straus, D. C.: Subdiaphragmatic Abscess. Surg. Clin. of Chi., Vol. IV, 1920.

26. Meyer, Jacob: Subphrenic Abscess. Suppurative Pyleplebitis Secondary to a Perforating Gastric Ulcer, Med. Clin. N. A., Vol. VIII, No. 2, Sept., 1924.

27. Straus, David C.: Subphrenic Abscess. Surg. Clin. N. A.: Vol. III, No. 4, Aug., 1923.

28. Harsha, W. M.: Subphrenic Abscess. Inter. Clin., 29th Series, Vol. II, 1919.

29. Douglas, John: Subdiaphragmatic Abscess and Accumulations of Fluid. Ann. Surg., Vol. LXXIX, No. 6, June, 1924.

30. Hagyard, C. E.: Subphrenic Abscess. North. Med., Vol. XXIII, No. 6, June, 1924.

31. Eicher, C. G., and Kibzey, A. T.: Subdiaphragmatic Abscess. At. Med. Jour., Bol. XXVIII, No. 1, Oct., 1924.

32. Hodges, F. M.: Subdiaphragmatic Abscess. J. A. M. A., Vol. LXXX, No. 15, April 14, 1923.

33. Sommer, J.: Roentgen-ray Examination of Subphrenic Abscess. Zent. für Chir., Vol. I, No. 6, Feb. 10, 1923, Abst. in J. A. M. A., Vol. LXXX, No. 15, April 14, 1923.

34. Bauman, M.: Subphrenic Abscess. Beit. zur Klin. Chir., Vol. CXXVIII, No. 2, 1923, Abst. in J. A. M. A., Vol. LXXX, No. 18, May 5, 1923.

35. Cottle, G. F.: Subphrenic Abscess Following Appendectomy, U. S. Nav. Med. Bull., Vol. XIX, Nov., 1923, Abst. in J. A. M. A., Vol. LXXXI, No. 26, Dec. 29, 1923.

36. Da Costa, J. C.: Modern Surgery, 1919.

37. Coffey, R. C.: The Principles and Mechanics of Abdominal Drainage. J. A. M. A., Vol. XLVIII, p. 937, Mar. 16, 1907.

38. Bernard: Brit. Med. Jour., 1908, Vol. I, p. 371.

39. Coughlin: J. A. M. A., 1912, Vol. LVIII, p. 680.

40. Nather, Carl: Arch. für Klin. Chir., Nov. 30, 1922, Abst. in J. A. M. A., Feb. 2, 1923.

Vitamin Requirements of Nursing Young. Barnett Sure, Fayetteville, Ark. (Journal A. M. A., Aug. 27, 1927), details experiments which show an unusual response of nursing young (mus norvegicus-albinus) to vitamin B administrations. He also suggests that a large proportion of the infant mortality during the first year of life which is associated with gastrointestinal disturbances may be due to vitamin B deficiencies. Such vitamin deficiencies may be brought about by the character of the present American diet, which is composed largely of degerminated cereals, sugar and meat.

RHEUMATIC HEART DISEASE

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It is important at the start to visualize rheumatic infection, the cause of rheumatic heart disease, as a chronic disease with acute exacerbations starting in childhood or early adult life and running a course of varying severity sometimes causing death either in the acute attack, which is comparatively rare, or years later as a result of the widespread damage done to the heart. Rheumatic infection considered in this light is comparable to such chronic infections as tuberculosis and syphilis. The common text book method of handling the subject is to consider separately not only the various acute manifestations but also the resulting cardiac disease.

I should like to discuss rheumatic infection under three headings: First, the initial infection, i.e., the acute attack, be it rheumatic fever, chorea, tonsillitis or the milder insidious growing pains which sometimes mark the invasion of the system by the rheumatic virus; second, the established cardiac disease, as exemplified by the patients discovered in the course of routine examinations, insurance or army medical examinations to have a definite rheumatic heart disease; third, the so-called decompensated cardiac patient, who possibly a number of years after his initial infection, begins to show the effect of that attack on his heart.

Heart disease is now first in order of causes of death and probably also first in the amount of damage it does through invalidism and disability. It is generally agreed that the morbidity of organic heart disease in the general population is approximately 2 per cent, though it is difficult if not impossible to fix this figure with any degree of accuracy. The increasing death rate from cardiac disease is no doubt partly explained by the falling rates from those former leaders, tuberculosis and pneumonia, for as fewer persons die of these infections, more will survive to succumb to the degenerative diseases of later life, among which heart disease occupies a prominent position. It is not, however, with the degenerative type of heart disease that we are concerned but rather with that due to rheumatic infection, and the encouraging feature of the outlook is that we are coming to realize more and more that organic heart disease and especially this rheumatic type of heart disease, is largely a preventable disorder. The field of preventive medicine holds tremendous possibilities in many departments of medicine but nowhere does it reveal the opportunities for such widespread good, not only to the patient in relieving suffering and ill health, but to the community in maintaining the individual's potential economic value.

The accompanying chart shows the course of the death rate from organic heart disease during the years 1911 to 1924. Between 1910 and 1918 there was a slow rise, with the maximum death rate for this period coming in 1917 and 1918. The three following years 1919, 1920, 1921 were years of low rates and there is every indication to believe that this was largely due to the ravages of influenza in eliminating many persons who would otherwise have died of heart trouble. For the sake of comparison I have added to the chart the death rates from tuberculosis which show a considerable decrease during this same period.

The proportion of the whole group, designated in vital statistics as organic heart disease, which is rheumatic in origin, is difficult to ascertain. Wyckoff[1] in a recent review found that 25 per cent were rheumatic, while English observers[2] and a survey made in Boston[3] have shown that about 50 per cent is the correct figure. Connor[4] found that syphilis was rarely a factor in causing heart disease before the age of thirty-five and so few cases were observed to arise as a result of such infectious diseases as scarlet fever, pneumonia, and influenza that they were of little importance. In children and young adults suffering from organic heart disease, other evidences of rheumatic infection, as rheumatic fever, chorea, recurring tonsillitis, myositis, and bone or joint pains, are found in 85 to 90 per cent of cases. In any event it is safe to say that rheumatic heart disease makes up the largest group of organic cardiacs and that depending on the age distribution of the group studied the proportion may vary from 25 to 90 per cent with 25 per cent a nearly correct estimate for the population as a whole. The cardiac problem in persons under forty years of age is, therefore, virtually that of rheumatic infection.

There is a considerable variation in the incidence of rheumatic infection in different localities. In England and the New England States, the incidence is high with the result that the proportion of rheumatic heart disease is increased, while in the Southern States and in the West the incidence of rheumatic infection appears to be lower with a corresponding decrease in the proportion of rheumatic hearts. The proportion of rheumatic heart disease among organic cardiacs is a question that deserves further study along the lines followed by Dr. Wyckoff[1] in his analysis of 1000 cases. These were out-patient clinic patients and the number of children was large. The insidence of rheumatic heart disease was, therefore, higher in this series than it would be in the general population. Of the 1051 cases, 449 or 42.7 per cent were rheumatic. Private patients studied showed 25.5 per cent to be rheumatic and ward patients, 25 per cent. Wyckoff concludes, therefore, that approximately one-quarter of all cases of organic heart disease will be rheumatic. Table 1 shows very definitely the increased incidence of rheumatic heart disease in the early decades and the increased incidence of the degenerative type of heart disease in the later years.

THE INITIAL RHEUMATIC INFECTION

This may occur as acute rheumatic fever, chorea, tonsillitis, myositis, vague bone or joint pains, so-called growing pains, various cutaneous manifestations, as erythema multiforme or subcutaneous rheumatic nodules. It is possible that cardiac damage may occur as the only manifestations of the initial infection without any of these so-called peripheral manifestations appearing. A carditis or probably a better term, a pancarditis, should, therefore, be added to the list of possible types of early rheumatic infection. The incidence of cardiac involvement in rheumatic infection is undoubtedly high, the exact figure being almost impossible to obtain because of diagnostic difficulties. MacKee[5] in a recent article found serious cardiac involvement in 68 per cent of cases of acute rheumatic fever irrespective of age, and in 78 per cent of cases between the ages of 10 and 15, and Swift,[6] who used an electrocardiograph in addition to clinical examination in order to detect all cases of cardiac damage, found some degree of disturbance in over 90 per cent of cases. The incidence of cardiac involvement in chorea and other forms of initial rheumatic infection is lower than this. The disease is characterized by recurrences and relapses, in which the symptoms produced may be similar from time to time or may vary as, e.g., in the child with recurring tonsillitis, who finally shows evidence of cardiac damage, who later develops an acute rheumatic fever and later a chorea, each recurrence of the infection producing some further damage to the heart.

Of the predisposing factors little need be said. There is no definite hereditary influence in rheumatic infection, though there is a familial tendency which probably evidences a low grade infectivity, rather than any heredity. St. Lawrence[7] in his investigations found that exposed persons, that is, the parents and other children of one hundred families, living with a case of rheumatic infection (he included therein only rheumatic heart disease, acute rheumatic fever, and chorea), showed a remarkably high incidence of rheumatic infection, a slightly higher incidence than was found in a similar study made of one hundred families exposed to tuberculosis. This would seem to indicate that rheumatic infection is a communicable disease.

The bacteriology of this disease is not definitely worked out, though the weight of recent evidence all points very strongly to a streptococcus type of organism as the offender, a relation long ago pointed out by Poynton. All the requirements necessary to establish this microorganism as the cause of rheumatic infection have not been fulfilled and until this is done the work of treatment and certainly preventive treatment, will be greatly handicapped. Coombs and Poynton[8] in a report on the recent investigations into the bacteriology of the rheumatic infection, conclude that "there is no rival to the streptococcus theory," and Clawson[9] states that "there are grounds for the belief that rheumatic fever with its associated lesions is produced by streptococci."

The damage to the heart is a pancarditis and occurs by way of the coronary circulation. The pathologic changes produced are fairly constant, the inflammatory reaction being largely productive and involving the valves, the heart muscle and at times the pericardium. The valves are involved in the following order, mitral, aortic, tricuspid, and rarely the pulmonary. The high incidence of mitral disease (practically 100 per cent of rheumatic hearts show mitral involvement) has been the subject of considerable comment. That a possible explanation has been found seems likely from the recent work by Gross[10, 11] on the vasculature of the heart. He has shown:

1. All fetal valves possess musculature and vasculature.

2. Usually, sometimes before birth, the musculature and vasculature undergo regression.

3. In a small percentage of individuals there is a persistence of blood vessels to adult life and this persistence renders the individual predisposed to embolic valvular endocarditis.

4. The aortic leaflet of the mitral valve is the last to lose its vasculature and is the most frequent seat of endocarditis.

These findings are of considerable importance. Recent opinion has strongly favored the embolic origin of rheumatic endocarditis, and the presence of vessels on the valve leaflets would render such a mechanism possible. Heretofore vessels on the heart valves have been regarded as of inflammatory origin. The delayed regression of the vessels on the aortic leaflet of the mitral would explain the large incidence of mitral involvement in rheumatic heart disease. The lesion produced in the valve is, therefore, not a true endocarditis but rather a valvulitis set up as a result of embolic processes in these persisting valvular vessels.

The damage to the valve has been described as: simple, small vegetations without much functional disturbance; fibroid, that type that produces a progressive sclerosis of the valve leaflets, as exemplified by cases of mitral stenosis; and malignant, with extensive destruction of the valve. This latter class is not to be confused with malignant ulcerative endocarditis, a nonrheumatic type of infection. The lesion of the myocardium is the now well known Asschoff body, the submiliary nodule, made up of a few large spindle shaped multinuclear cells, giant cells, surrounded by an area of lymphocytic infiltration. These nodules tend to be slowly replaced by connective tissue, and when the damage to heart muscle has been very extensive, the resulting fibrosis may so weaken the muscle as to produce the later symptoms of cardiac insufficiency. The pericarditis when it occurs is usually exudative and may result in adhesions between the two layers of the pericardium or what is even worse between the parietal percardium and the surrounding mediastinum. This adds even further embarrassment to a heart already badly damaged.

The prevention of any disease depends on an accurate knowledge of its cause and until the cause is definitely known, preventive measures are restricted. The relation of rheumatic disease to foci of infection is a much discussed subject, about which there still remains a great difference of opinion. Various foci are held responsible as the port of entry of the rheumatic infection, the most usual offenders being tonsils and teeth, with nasal accessory sinuses occasionally playing some part. Infected tonsils are certainly the port of entry in certain instances, whereas in others the system has already been invaded by the time the tonsils show evidence of disease.

Miller,[12] in a careful report on the effect of tonsillectomy on rheumatic infection in children, concludes that in taking out the tonsils, only one factor predisposing toward the disease is being removed, and that while certain benefit is possible, the procedure should not be considered a cure-all to the exclusion of the employment of other factors of known value. The part played by other foci is even less clear. Abscessed teeth, which seem to be definitely responsible for certain cases of rheumatic infection in adults, are not as frequently a source of the trouble in children. The English clinicians are prone to stress the importance of environmental factors, such as dampness, exposure, and social status, each of which no doubt plays its part in aggravating an infection such as this, once it is established. It is possible that further statistical studies will show that early removal of the tonsils will lower the incidence of rheumatic infection and the incidence of cardiac involvement, though it seems obvious that to accomplish this purpose best, the tonsillectomy must be performed soon after the tonsils have become infected.

Treatment. The treatment of the initial stage of rheumatic infection must consist first in absolute rest in bed, and to assure this the usual precautions as to height and width of bed, and type of mattress must be observed. Rest must be enforced throughout the acute stage and as long thereafter as indications require. Swift[6] in a study of seventy-two cases of acute rheumatic fever found that it was necessary to keep these patients in the hospital for an average period of about fifteen weeks, following which they had from two to six weeks in a convalescent home, a total of about five months treatment.

Medicinal treatment of acute rheumatic fever still depends on the salicylates, practically always the sodium salt being used. Moderately large doses pushed at first until salicylate effect is produced, then reduced in amount, are most efficacious and least dangerous. For a patient of twelve years old or over, 120 to 180 grains accompanied by a similar amount of sodium bicarbonate is given in divided doses during the first twenty-four hours, depending on the severity of the symptoms and on the patient's ability to handle the drug. Much larger doses up to three hundred grains in twenty-four hours have been advocated but such doses are not without danger, collapse and even death having been produced, and they may frequently make the cure decidedly worse than the disease. The use of salicylates is almost universal, only a few clinicians avoiding them because of their toxic effects. Poynton,[13] who has had a long experience with rheumatic disease, has given up the use of salicylates altogether and relies on the derivatives of phenyl cinchoninic acid. His statistics compare favorably with others, a fact which belies the statement frequently made that salicylates lessen the incidence of cardiac involvement in rheumatic infection.

Besides rest in bed and salicylates, the elimination should be maintained and anemia treated if it occurs. Those patients suffering recurring attacks of rheumatic infection of considerable severity present one of the most difficult problems as regards treatment. Any attempt to clear up foci of infection in these cases may aggravate the condition even to causing a fatal issue. Yet the indications seem very clearly to point to the eradication of these possible portals of entry of further rheumatic infection. Each case must be handled separately and any operative procedures undertaken only after every precaution has been exercised to render the infection quiescent.

In the treatment of chorea rest is an even more important factor and, while it is often difficult to control the restless child and sometimes more difficult to control the family, I believe that rest in bed should be enforced in these cases at least for the first two or three weeks, certainly for some time after there is any elevation of temperature. The medicinal treatment of chorea will consist largely of those drugs that tend to quiet the patient and for this purpose the bromides may be sufficient, although often it is necessary to resort to small doses of chloral hydrate frequently repeated. Fowler's solution has long been recommended and is widely used without much indication for it. It is true that these patients frequently develop a moderate anemia, which requires treatment but some form of iron is more apt to produce good results in combating this anemia than arsenic and is less apt to produce toxic results. Hydrotherapy in the form of warm baths is a very valuable aid in handling these chorea patients, and in conjunction with systematic moderate massage it exerts a very marked sedative effect.

The treatment of tonsillitis consists in local treatment aimed at aborting or relieving the local condition and the general treatment accorded a mild acute infection. For the systematic treatment some form of the salicylate is usually employed. The treatment of the other forms of the initial rheumatic infection cannot be taken up in detail, except to say that where the symptoms are acute from the onset the use of salicylates is undoubtedly indicated.

Aftercare. The aftercare of patients suffering from an acute attack of rheumatic infection is, I believe, the most important phase of the whole subject. It is certainly the most important from the standpoint of preventing serious cardiac damage. The value of prolonged rest has been so well taught in connection with the treatment of tuberculosis that we now take it for granted, yet there is no greater need for rest in pulmonary tuberculosis than there is in these patients convalescing from an attack of acute rheumatic infection. We know that in the severe types there is some damage done to the heart in practically every case and this damage is not localized to any one part of the heart but is widespread. Such a heart must have a prolonged period of rest in order to recover as far as possible from the devastating effect of the attack. A duplication of the treatment given tuberculosis patients would, I believe, give considerable benefit to these cardiacs. Sanitaria should be established and are being established for the after care of these patients, where they may have prolonged rest in fresh air and sunlight, then graduated exercises, and what is almost as important, some occupational training to fit them to carry on such work as they are able to perform. It is hopeless to put these patients at rest for a long period, give them graduated exercises, then let them assume some task for which their cardiac disability makes them entirely unfit.

There can be no hard and fast rules as to the duration of the after treatment; each patient must be individualized and given the treatment indicated. Educational opportunities must be given convalescing cardiac children and, just as we need open air schools for tuberculous and pretuberculous children, so we require special schools for cardiacs where they can receive some education along with sufficient rest for their heart disease.

Potential cardiacs, that is patients, particularly children, with a history of one or more attacks of rheumatic infection, who do not yet show evidence of cardiac damage, and yet in whom there is almost certain to be some effect on the heart, should be accorded this same consideration. Medical societies and lay organizations anxious to do something to further preventive medicine could do nothing better than to arouse public interest in the question of the after care of patients with rheumatic heart disease.

ESTABLISHED CARDIAC DISEASE

The patient, discovered during the course of routine examination to have rheumatic heart disease, is frequently at a loss to account for the condition. No history of rheumatic fever, chorea, or even of tonsillitis may be obtained, but on going carefully over the past history, ill defined "sick spells" may be discovered or a history of "growing pains" elicited. These poorly defined "sick spells" may be instances of the initial rheumatic infection sufficient to cause involvement of the heart without any well defined peripheral manifestations. The commonest time for these rheumatic infections to occur is between the ages of five and fifteen years, Coombs finding that one-third of his cases started during that decade. This is a time when it would be easy to overlook a mild or poorly defined illness, especially since the cardiac damage may not be discovered for ten years or more, making it even easier to forget the initial assault.

The problem that meets us in dealing with these patients once they are discovered is one of prognosis, and our efforts should be directed towards evaluating the signs and symptoms that they show for that purpose. I am speaking now of the patient with rheumatic heart disease discovered during routine examinations. These patients are sufferers from rheumatic infection in a latent or quiescent stage and in most, probably all of them, the cardiac damage is progressive from the time of their initial infection until the final cardiac breakdown. These patients at this time have never had a breakdown or an attack of so-called cardiac decompensation, a fact which very considerably improves their outlook.

A prognosis can rarely be made satisfactorily from a single examination, since the basis of our prognosis must rest on the rate of progress of the cardiac lesion, a fact that can only be determined by repeated examinations. The symptoms the patient complains of will also help in this problem of prognosis. An increasing dyspnea on exertion, pain around the heart, increased fatiguability, slight loss of weight, all are evidences of early cardiac strain.

Examination of the heart usually shows besides the valvular lesion, some enlargement, which is always an indication of organic cardiac disease. Recent work, both experimental and clinical, has confirmed the opinion that there is no cause for enlargement of the heart except organic heart disease. The athletic heart is a myth, except as it indicates a diseased heart that has been subjected to too much strain. A normal heart never hypertrophies.

At this stage of the disease the rhythm is usually quite regular and the occurrence of any gross disturbance, such as auricular fibrillation, adds materially to the gravity of the prognosis. Fibrillation may start in these patients as short paroxysms, gradually increasing in frequency and in duration, until ultimately it becomes established as a permanent condition. These early short paroxysms may be described by the patient as atacks of palpitation, which symptom we are apt to minimize, unless we keep this thought in mind. The onset of auricular fibrillation always marks a step downward in the progress of these conditions.

X-ray examination of the heart and aorta may be of value in making the record complete, and for sake of future comparison. It is in these patients that I have found the estimation of pulmonary vital capacity of considerable value. A falling vital capacity undoubtedly means a progressive weakening of cardiac function and it may make this clear before any of the other signs of a failing circulation appear. An electrocardiogram is of value at this stage of the disease only in excluding any serious derangement of cardiac mechanism. A patient not showing any symptoms of heart involvement will not likely show in the electrocardiogram any very definite deviations from normal.

Treatment. Once an estimate is arrived at as to the amount of cardiac damage and some idea of the prognosis has been achieved, the next step is to get the patient into that work or activity which his cardiac condition will permit. It is in this type of patient and in those convalescing from an acute attack that the sanitaria now being considered, if provided, can do the most good. We must educate ourselves and the public to the value of careful, systematic care of these cardiacs, if we are to accomplish anything in our effort to reduce the morbidity and lessen the mortality of this disease. They must have care as long and as well regulated as that providen in sanitaria for tuberculosis. There is probably no problem in internal menicine more difficult to decide than the prognosis and proper management of these "discovered" cardiacs. We have practically no satisfactory means of arriving at a true prognosis, which is most essential as it carries with it the future management of the patient as to activity and ability to gain a livelihood. Sir James MacKenzie emphasized this point many times and he was in fact at the time of his death engaged in an effort to discover some means by which we could arrive at a prognosis in these cases.

We are all familiar with the problem of the pregnant woman found to have a well marked mitral stenosis during the course of a routine prenatal examination. How little we can tell her of her proper course, her outlook in this pregnancy and in future pregnancies, if any. She has until this time never known that she had heart trouble and now, faced with the fact at a time when her responsibilities are rapidly increasing, she naturally turns to the medical profession for advice, yet we can tell her very little. All of which indicates the urgent need for an adequate survey of the whole problem of rheumatic heart disease, continued over sufficient time to give us some facts on which to render a prognosis in these cases.

THE STAGE OF DECOMPENSATION

In this, the last stage of rheumatic infection, the picture presented is one familiar to us all. The dyspneic, cyanotic, edematous patient with rapid, irregular heart, a vital capacity very much diminished, x-ray demonstrating considerable enlargement of the heart, and an electrocardiogram showing auricular fibrillation with some further evidence of myocardial damage, all go to complete the picture of congestive heart failure. I am not going into further description or medical treatment of these patients because that is a subject unto itself. I wished to mention them here to present the completed picture of this prolonged chronic illness which we call rheumatic infection. These breakdowns usually mark the end and, whereas the patient may be able to recover from them at first, his recuperative powers, his response to digitalis and rest slowly fail, and after several or many of such breakdowns there is no recovery. The prognosis even in this stage is subject to a number of conflicting factors and rarely a patient may make a complete recovery and go on for a number of years, though such is not the rule, for one breakdown usually presages a recurrence with early exitus.

SUMMARY

Rheumatic heart disease, then, is a chronic infection, a rheumatic infection of unknown etiology, but quite probably due to a streptococcus. It is a disease that has its inception in childhood or early adult life and runs its course of varying duration or severity, a course characterized by acute exacerbations and long periods of quiescence, to terminate fatally some years after the onset. Until the cause has been demonstrated our efforts at prevention will be limited, but even at this time we can protect the patient convalescing from the acute rheumatic fever, the so-called potential cardiac, to a considerable extent by careful management, and we can further aid the unfortunate cardiac cripple, giving him every opportunity to lead a useful life by educating him and giving him some vocational training.

BIBLIOGRAPHY

1. Wyckoff, J., and Lingg, C.: Am. Heart J., 1:446, April, 1926.
2. Askins, R. A.: B. M. J., p. 791, Oct. 13, 1925.
3. Russel, B. L.: Boston M. & S. J., 191:573, Sept. 25, 1924.
4. Conner, L. A.: Am. J. Med. Sci., 158:773, Dec., 1919.
5. Mackie, T. T.: Am. J. Med. Sci., 172:199, Aug., 1926.
6. Swift, H.: Am. J. Med. Sci., 170:631, Nov., 1925.
7. St. Lawrence, W.: J. A. M. A., 79:2051, Dec. 16, 1922.
8. Coombs, C. F., and Poynton, F. J.: B. M. J., Supp., p. 13, July 3, 1926.
9. Clawson, B. J.: J. Infect. Dis., 36:444, May, 1925.
10. Gross, L.: The Blood Supply of the Heart, P. B. Hoeber, N. Y., 1921.
11. Kugel, M. A., and Gross, L.: Am. Heart J., 1:304, Feb., 1926.
12. Miller, R.: B. M. J., Supp., p. 16, July 3, 1926.
13. Poynton, F. J.: B. M. J., p. 788, Oct. 31, 1925.

ORGANIC AND FUNCTIONAL NERVOUS DISORDERS*

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To differentiate successfully functional and organic nervous lesions always has been the most difficult point of diagnosis in the practice of medicine, and will always remain so. The automobile and other means of rapid travel, increasing injuries as they have, and the advent of compensation laws bring this most difficult diagnosis constantly before us. It is, therefore, not only the most difficult diagnostic problem, but it is the most common and important as well.

At the outset, we may as well agree that there is no definite line of demarcation between functional and organic nerve lesions or, as Purves Stewart says, "the boundary line is purely imaginary." Just because gross and microscopic examination of nerve tissue by our present methods fails to reveal pathology, we are not justified in assuming that tissue changes have not taken place. Now, after admitting that organic and functional diseases do not exist as separate and apart, it is my pleasant duty to tell you how I differentiate them.

Because of constant urging of courts of law and state industrial commissions, it behooves us to assume a boundary between these two large groups of cases. If that line does not exist for practical purposes, we make one. The admission that they are not always separable emphasizes at the outset that, on the one hand, we have cases of definite nerve pathology; on the other hand, cases which seem to be purely neuroses or psychoses. Then there is a vast middle ground of mooted cases into which you and I must delve to get at the facts and attempt to classify.

Let us begin with the organic disorders, not by enumerating and differentiating the multitude of organic affections, but by suggesting the agents which commonly cause definite nerve pathology. This means that no attempt will be made to describe individually syphilis of the central nervous system, brain tumor, cord degeneration or any purely nervous disease. I am merely endeavoring to suggest a procedure, or more exactly, to emphasize the means you already utilize, believing that if thoroughly done, they are entirely adequate. When such a case is presented, it calls, first, for a careful history and complete physical examination; second, specialist's examination, particularly of the eyes, ears; if the case demands it, an orthopedic or genitourinary examination, etc.; third, laboratory findings; and, fourth, a neurologic examination.

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1. Careful history and thorough physical examination. The thoroughness with which the history is recorded and the examination done will determine whether the service of any of the other three named, that is, neurologist, specialist, or laboratory is necessary at all. We must go back into the family history of these cases. A neuropathic record, however, must not be given enough importance to deter the examiner in looking minutely for organic disease.

It is as true now as ever, that a so-called complete physical examination is really *the* examination, and the specialist's contribution may be considered only as help. Undergraduate terrors will be revived when we repeat the words inspection, palpation, percussion and auscultation, but they are still our chief diagnostic helps.

Routine spinal punctures on five hundred consecutively born children at City Hospital, Manhattan, showed blood in the fluid in over 9 per cent. Most of these cases had no alteration in bleeding time. Very few of them were abnormal births sufficient to suspect injury and only an occasional one of this 9 per cent was serious enough to cause symptoms, but we make a mistake if we do not always look for them. As the child grows older, any retarded development in the case may not be wholly nutritional or functional and these birth injuries are now definitely manifesting themselves and perhaps will become spastic paraplegias or Little's disease. The age of childhood brings with it many cases of meningitis, the epidemic and sporadic cases of poliomyelitis. Adolescence and the age of puberty is the fruitful period for the changes in personality, hysteria, epilepsy in its various forms. Let me emphasize now the very common occurrences of hysteria after twelve years of age.

In early adult and middle life we look for and expect to find the nervous phenomena incident to cardiac disease, kidney disease and focal infection, embolic and uremic manifestations. These may simulate any kind of paralysis. After middle life, vascular lesions of a different type are presented and they are by no means all cerebral hemorrhages. Embolic phenomena and particularly cerebral thrombosis are present. Let us take an example from general practice.

A woman, 65 years old, came to the clinic stating that she had been only in fair health for several months. She had a slight heart murmur, moderate nephritis and moderate hypertension. These had not essentially changed during the past two or three years, but on careful questioning we elicited from the family that her personality had gradually changed during the last few months. She was getting more forgetful than she should be at that age, became very disagreeable, cried out at night, became very depressed. Her personality changes suggested a senile psychosis, but careful examination, during the next few days, revealed a slight left facial weakness. This was followed in a few days by a loss of power in the left hand and after only a few days more she had a well defined hemiplegia. What was thought to be a functional disease we now know to be one of cerebral softening, caused by cerebral thrombosis.

The list of diseases looked for in the general physical examination should be headed by focal infection. We see the ravages of infectious foci from teeth, tonsils, sinuses, etc., on the heart, kidneys and joints, and they are more often than is commonly supposed deposited in the brain, spinal cord and peripheral nerves. These are the sources of infectious materials for brain abscesses, many of the meningitides, cases of myelitis of the cord and peripheral neuritis.

It has long been known that chronic pulmonary infections, as abscesses of the lung and empyema, cause embolic cerebral phenomena. Cardiovascular lesions very commonly cause secondary nerve lesions, as witnessed by the cases of apoplexy, cerebral thrombosis and embolic phenomena similar to those in chest infections.

Any case considered chronic, in which the practitioner is harassed by the repeated complaints, should be gone over as we have indicated. These systemic abnormalities, as well as numerous others, should be definitely excluded before the patient is thrust, for convenience, into the common receptacle of neurasthenia.

2. Special tests, particularly ophthalmoscopic examinations and the various functional ear tests, are indispensable in all cases. Orthopedic examinations are made to determine the significance of contractures, and whether certain pains and paresthesias may not be due to spinal caries or body lesions else-

where. Genitourinary examinations are frequently necessary to determine the cause of pain.

3. Laboratory findings should begin with complete urinary tests. A patient bordering on uremia may develop paralysis of any type. Pus or blood in urine may spoil a perfectly good diagnosis of lightning pains of tabes. Blood tests enable the examiner to account for the paresthesias of pernicious or extreme secondary anemia. The leucocyte count assists in the discovery of inflammatory processes. A Wassermann test is now made routinely in every nervous examination, and false judgments are rendered unless we remember that, in some types of syphilis of the central nervous system, it is positive in only 50 per cent of cases.

Spinal puncture is now done rather commonly in carefully selected cases. The cell count, the amount of globulin, or one of the various serologic tests may furnish the necessary information for a diagnosis. We are now using very successfully the variations in spinal pressure as diagnostic helps. The normal is 6 to 10 mm. Hg. Many chronic cases claiming injury to the head are found to have a pressure above 10 mm. At least a normal pressure may be another link in the chain of evidence that the patient is malingering or suffering from a neurosis. Practical uses of the spinal manometer are made by jugular compression. If both jugulars are compressed and there is no obstruction in the spinal fluid chanels, there results a rise of 10 to 20 mm., or even to more than 30 mm. When the pressure on one side is released, there is a partial drop, and when released on both sides there is a return to normal. In mastoid cases the alternate jugular compression will tell whether a sinus thrombosis is present. Xanthochromia or colored spinal fluid, usually yellow or amber, particularly when it clots readily may furnish the differentiating information as it did in one case for us.

A middle aged woman came to the clinic complaining of pain in lower abdomen and back, sometimes into the legs. She already had had her appendix removed. Definite pelvic pathology was found and was our only organic evidence. A few weeks' comfort after operation and her symtoms returned and were more transient than ever. Pains would come and go with the utmost facility and we were about to relegate her to the neurosis heap, when we did a spinal puncture and obtained only a few c.c. of yellow spinal fluid which coagulated before we got it to the laboratory. We obtained no response with our jugular compression and we now tardily knew we had a cord compression with irritations of posterior nerve root. A careful recheck on neurologic findings showed slight atrophy of thigh muscles of one side and slightly unequal patellar reflexes.

4. The neurologic, as a rule, could be part of the general physical examination, but whenever it is made, it should be done in a routine manner to prevent the leaving out of important tests. Begin by investigating sensation, as this is the most tedious and is usually omitted. It takes only a few minutes to go over the patient with a pin for pain sense, hot and cold test tubes for temperature and a piece of cotton, or a tip of a handkerchief for sense of touch.

A husky man in his twenties came to the clinic complaining of pain and paresthesias in his left shoulder and arm. Believing we had a case of peripheral neuritis, a search was made for infectious foci. The usual localities had been cleared up. We saw no help there. The reflexes of the right lower extremity were slightly exaggerated and when asked he gave the information that he was becoming slightly more awkward in the right leg. The case was clear that we had cord compression in the cervical area, giving sensory symptoms of left arm and motor symptoms to the right lower extremity. This was partial Brown-Sequard syndrome, or so-called crossed paralysis. Later we found a hard lobulated tumor about the size and shape of a peanut, arising from the fifth cervical nerve. This had given sensory symptoms on that side by involving the posterior roots and giving motor symptoms to the opposite lower extremity by compression of the cord.

A tuning fork used on the bony prominences of the body, as the iliac crests, malleoli and spinous process, frequently depicts loss of vibratory sensibility and by checking the blood more closely and by stomach analyses, we have found early cases of pernicious anemia.

Continue by categorically investigating the cranial nerves in their numerical order.

1. Has the patient noted any loss of sense of smell, or does he for unexplained reasons complain of unusual odors?

2. Is there any lessening of visual acuity? Test roughly his vision by the finger tests and chart the fields if any doubt exists.

3, 4 and 6. These regulate the movements of the eyes. Is there any paralysis here?

5. This is a mixed nerve, sensory to the face and motor to the muscles of mastication. The first signs to appear in a recent case of cerebrospinal syphilis were loss of sensation of pain over one side of forehead and failure of the muscles of mastication to stand out when the patient was asked to bite. The 7th cranial nerve supplies motor function to face and is not so often missed. Its lingual connection via the chorda tympani may give the desired information.

8. This is a combined nerve of hearing and equilibrium, commonly affected in accoustic tumors. Look for loss of hearing, tinnitus or vertigo.

9, 10 and 11. The glossopharyngeal, vagus and bulbar portion of spinal accessory should be considered as one mechanism. Their nuclei for practical purposes are inseparable. Roughly speaking they furnish sensation to the gastrointestinal tract from the pharynx to the duodenum. Their laryngeal connections are better known. The syndrome of the 9-10-11 is frequently spoken of and has reference to the triad, (1) paralysis for liquid swallowing, (2) paralysis for solids, (3) hoarseness.

The spinal portion of the 11th or spinal accessory controls the motion in the sternocleidomastoid and trapezius muscles and when irritated gives rise to torticollis and wry neck.

12. This is a purely motor nerve and subserves the muscles of the tongue. The tongue is pushed out and in paralysis deviates to the affected side. We expect atrophy in a long continued lesion.

Now is a good time to proceed with the reflexes, beginning with pupils. Do not omit the corneal and pharyngeal which are frequently lost in hysteria. Test upper and lower extremities. Not only the patellars but abdominal and cremasteric must be examined. Are the reflexes present? Are they subdued or exaggerated? Are they bilaterally equal? Look for pathologic reflexes, such as the Hoffman and Babinski. Look for ataxia by the finger to nose, and heel to knee tests. Has the patient a positive Romberg? We must remember a patient can feign a positive Romberg, but cannot alter the reflexes. Is a clonus present and well sustained? Hysterical patients frequently confuse us with a spurious clonus or contractures.

Is atrophy present? This is always an excellent test to separate malingering and functional from organic patients. Test the electric reaction to degeneration which is never present in functional paralyses. Lesions of the lower neuron are much easier demonstrated than upper neuron paralysis. Paralysis of a single muscle is pathognomonic of organic disease.

By this time the examiner has had an excellent chance to observe posture, gait and mental reaction of patient. Is he suggestive, nervous or unwilling to cooperate? Is he properly oriented for time and place? Patients with beginning psychoses are frequently unable to give day of week or month of year, or know exactly where they are or why. Some such routine will enable the examiner to catch the most important and most common neurologic lesions.

Before continuing with the functional group it may be well to observe again that there is no royal road to diagnosis and in our experience the harder we work on a case, the more we recheck results and the more detailed our tests in every way, the greater our organic group becomes and the fewer the functional cases until at times we are about to agree with many who assert there is no neurasthenia and kindred ills without an organic basis.

In the functional group are listed the neuroses, psychoneuroses and psychoses. They include the cases of neurasthenia, so-called nervous breakdown, compulsion neuroses or psychasthenia, epilepsy, hysteria and, finally, the cases of mental deterioration. More time will be taken with the benign deviations from the normal, that is, the neuroses, for it is rare that the genuine malignant mental cases perplex us for very long.

Among the many relatively mild nervous disorders we see the frequent cases of malingering. While we are trying to separate the organic from the functional, we must remember that many cases are compounds of both. That is, a man can be injured and have a neurosis as well, brought on or exaggerated by the injury. But we more often have the injury case who feigns greater disability than exists or after a favorable opportunity claims disability when none whatever exists. The cases of malingering, as you who are doing industrial work know, have always given us great trouble and, owing to the laws designed to protect the really injured, the malingerer takes advantage and will give us more difficulty in the future. Our practice is to stake out in these cases the pertinent points in the history, the organic abnormalities found, if any, by some such routine as suggested and thus show the absurdity of their claim. Such a procedure is the only defense we have for such cases and should be dealt with without compromise. Thus we are able to help the patient who is justly entitled to a claim.

It is in those persons of a neuropathic disposition who have some organic trouble, with perhaps a dab of malingering, who give us the greatest anxiety because the physician is expected to give the nature and degree of disability. If we think of these peoples' complaints and claims for compensation in the light of defense mechanism, we will understand them more readily. They are not quite able to put the job over, as it were, and their conscious or unconscious way of attempting it is the reason for their being before us.

If we think of life in terms of struggle for existence, and state of mind and health of the nervous system as indicators of how well the adjustment between the individual and the environment is being made, we will go far toward explaining nervous exhaustion, nervous breakdowns and the more serious disorders.

Schwab of St. Louis puts it in this way. "It is essential to appreciate this point of view which holds that the neuroses are, in a sense, an adaptative reaction of the nervous system springing from a real or a fancied need of the organism. They are protective and defensive structures which spring into activity when the organism is in danger or when the organism finds it more advantageous to substitute, for its normal environmental reaction, something else which, in this instance, takes on the guise of a disease. This picture is called a neurosis. The various complexes arising out of the impact of the human nervous sytem against difficult economic, social, domestic and traumatic stresses give the occasion and necessity for this defensive reaction."

The onset and course, I am reminded in a discussion of this subject, may be quite different in these two classes of cases. Functional disorders frequently have an abrupt beginning, take on various bizarre forms, and are likely to remain stationary. When they change they are liable to rapid remissions and just as rapid recrudescence and are frequently altered by suggestion. Organic affections are prone to increase in severity and get worse. They conform to signs and symptoms coming from special nerve tracts or specific radicular nerve supply.

SUMMARY

Theoretically, functional and organic disease cannot always be separated, but for practical purposes we must make a distinction. To differentiate them necessitates careful general, special, neurologic and laboratory examination, and interpretation of conditions found. We must ask ourselves such questions as these. "Is my patient underweight? Has he a primary or secondary anemia? Has he any respiratory, cardiac, or nephritic lesions? Is his strength being vitiated by focal infection?" These questions are pertinent, not only for the actual nerve lesions they may cause, but because a person in poor health cannot help being what people call nervous.

Before the patient is thrust into the uncomplimentary neurasthenia group, be sure he has not lost 20 per cent in weight, or is traveling on 60 per cent hemoglobin, or has an achylia gastrica. Complete the neurologic tests in a routine manner, carefully going over cranial nerves, reflexes, the sensations, etc. Check the other special tests yourself or by the help of a colleague. Complete the laboratory findings and, when all these tests are negative, you are warranted in assuming the trouble to be functional because it has no organic basis.

Once at that point, take a little time now to examine your patient in place of his body. Review his family history, look into his social, economic and family life; interest yourself a few moments by the vagaries, fancies and prejudices of his mental world. He has perhaps never been shown that unhealthy states of mind or a bad point of view spell failure to him and that his adaptative mechanism for a real or fancied need is not the right one.

HEMORRHOIDS*

SOME REMARKS ON THEIR TREATMENT

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Even a superficial discussion of a subject as broad as the treatment of hemorrhoids would be an impossibility in twenty minutes. This paper pretends to contain nothing but some practical opinions, based on my personal experience gained in the treatment of over a thousand cases of hemorrhoids of all types during the last sixteen years.

Some of these opinions will undoubtedly conflict with those of my hearers, as well as the teaching of men whose experience has been much greater than my own. They are not given, however, in an egotistical or dogmatic way, but merely to arouse thought and discussion, for I feel that at our county and state meetings a certain amount of latitude should be allowed the writer of a paper.

In the first place, there are some practical considerations to be taken into account by the physician outside of the purely scientific side. When the average patient consults his surgeon in regard to his self-diagnosed case of piles, there are some things he would like to know. The most prominent of these are: Is there any means by which he can be cured outside of a hospital operation? How long is he going to be detained from his business? Will it be necessary to take a general anesthetic? Will he have much pain after his treatment or operation, and how long will it last? Will the cure be permanent? As a professional man the physician should be able to answer these questions intelligently, at the same time taking into consideration the age, physical and financial condition of the patient.

There are times and cases when a patient is entitled to palliative relief and there are minor hemorrhoidal conditions that do not justify exaggeration, regardless of the fear in the mind of the patient. It is not an extremely rare thing for a patient to be sent to the hospital for an operation and, when he is on the table, for the surgeon to find to his chagrin that the large protrusion described in the office is nothing but an irritated skin tag or small thrombus.

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The only way these questions can be answered and the patient given intelligent advice is by an examination, which will give the doctor a complete knowledge of the pathologic condition. As a rule, the patient's description of his condition, bleeding, protrusion, etc., will give a fairly accurate picture of what the surgeon is going to find. In my opinion, however, a digital and visual examination is the only way to make the matter a certainty.

It is surprising the number of people who refuse to have an operation for their piles on the physician's casual advice, but who, after a thorough examination has been made, can be brought to a different viewpoint. It is not right to compel a patient to go to a quack in order to have a rectal examination.

The examination takes only a few minutes and requires no preparation. The patient lies on his side on the table, the knees drawn up and with only the nates exposed. He is first requested to bear down firmly for two or three minutes, to ascertain the condition of the external venous plexus, note at the same time being made of skin tags and other abnormalities.

The digital examination is now made to exclude cancer or polyp, but more particularly to ascertain the condition of the muscular and anal tissues. If the latter are tender and indurated and the muscles irritable, hypertrophic and spasmodic, it has an important bearing on subsequent treatment.

An anascope is now inserted. As it is being withdrawn the patient at the same time bearing down, an idea of the size, number and texture of the internal hemorrhoids can be obtained.

In cases where there is still a doubt in my mind as to the extent of the trouble, the patient is given a small enema, requesting him to allow his hemorrhoids to remain out after it has passed. This will give the most complete picture of the condition at its worst. In several cases, where I had almost been persuaded to use the injection treatment on a patient, this last method of examination showed the varicosities to be so extensive that I was forced to revise my advice. After the examination the physician should know whether it is simple internal, external or combined, whether complications are present and the condition of the muscles.

For the purpose of deciding on the method of treatment either advisable or allowable, I divide my cases roughly into three clinical stages. The first or earliest stage is characterized mainly by hemorrhages at stool, protrusion usually slight, returning by itself, muscles usually hypertrophied and irritable. This stage lasts for a few months to several years and is often accompanied by a marked anemia.

In the second stage there is protrusion which takes place only at stool but has to be manually replaced. Bleeding is slight and at irregular intervals, as fibrous interstitial tissue is forming and the covering is becoming thickened from superficial ulceration. The anal canal may be tight and infiltrated but is usually fairly normal.

In the third stage the protrusion comes down at the slightest physical exertion as well as at stool, and in some cases can not be retained. Varicosities are large, the covering thickened and hemorrhage rarely present. A little bloody mucous discharge may be present, as there is usually some prolapsus of the rectal mucosa. Anal canal is large and loose, the sphincters being atrophic and flabby.

In all these stages more or less extensive varicosities of the external plexus may be present, being the most common in the third stage, whereas attacks of external thrombotic hemorrhoids are more apt to occur in the first.

In regard to treatment. Hemorrhoids in the first stage can always be cured with little pain, no hospitalization and rarely detention from business. The method of choice in my opinion is the interstitial injection of dilute solutions of either phenol or quinine and urea hydrochloride, as outlined in works on that subject.

The soft fragile hemorrhoidal tufts will disappear like magic, and sometimes after two or three treatments all symptoms will have disappeared. The injections must be continued, however, until no bulging into the anoscope appears. If there is considerable induration of the anal canal with irritable sphincter muscles, the treatment should be preceded by a rectal divulsion.

The most satisfactory method of performing this little procedure, which is most valuable when indicated, is as follows: With the patient lying on the side and under primary anesthesia with ethyl chloride or nitrous oxide, a Cook's dilating rectal speculum is introduced; the blades are gradually opened to the fullest extent, at the same time firmly massaging the tense anal structures with the finger inserted between the blades. Two or three minutes is all that is necessary.

No harm can be done, as the instrument will only open to a circumference of three inches which is only slightly larger than the ordinary anal opening. The patient is left in a rest room for a few hours and then allowed to go home. Heat applied to the parts is very soothing for the ensuing soreness.

If the external veins are affected, they can be dissected out through button hole incisions under local anesthesia, after the internal condition is corrected. This is usually not desired, however, as they rarely cause trouble. If the physician does not care to use the injection treatment and the patient objects to an operation, the internal condition can be corrected as follows: The patient is anesthetized with nitrous oxide, and the rectum divulsed in the manner mentioned before. Then the two or three hemorrhoids, the position of which have been ascertained in the preliminary examination, are each seized with a noncrushing forceps and one by one a plain number two catgut, threaded on a noncutting needle, is thrown around their bases in such a way as to take in about one-half inch of mucosa and the underlying terminal artery and vein which supplies the hemorrhoid. These ligatures with the fingers in the rectum are firmly tied.

There is sufficient lateral circulation to prevent the hemorrhoid from sloughing and the soft hemorrhoid will shrivel up. If the anal canal does not require divulsion, this operation can be done under local anesthesia. Hospitalization is not necessary.

In the second stage the method of treatment of choice is excision with suture or ligature. If the patient refuses operation, the injection treatment may be used as a certain palliative measure with a reasonable percentage of permanently curative results to be expected.

The excision and ligature operation, as popularized by Mr. Salmon at St. Mark's Hospital in London nearly a century ago, has always and still holds its premier position as the operation of choice. Instead of using the linen or silk ligature, however, it is now more common in this country to suture the stump with plain catgut, closing the upper part of the incision with one or two catgut sutures over a small clamp, or else using the cautery to produce hemostasis.

Dozens of operations have been devised during the last four decades to improve on this procedure, but with two exceptions none has been able to supersede this simple method, even temporarily. The clamp and cautery and the Whitehead operations for a time became quite popular, the former in the United States and the latter in England, but neither at the present time is recognized as an operation of choice.

The clamp and cautery operation, with a preliminary dissection of the hemorrhoids and only using the clamp and cautery on the stump, is not the original operation of Mr. Smith. When used in this way there can be no objection to it, although the consensus of opinion seems to be that internal hemorrhage is more likely to occur than when the hemorrhoidal artery is tied off with a suture or ligature.

The Whitehead operation will undoubtedly always occasionally be used in those extreme varicose conditions, involving the entire internal and external plexus of veins. Personally I prefer to use the excision with suture or ligature method, endeavoring to preserve a small part of the lining of the anal wall by subcutaneous dissection or maceration.

The two surgical advances, that during the last thirty years have been most valuable as applied to the operative treatment of internal hemorrhoids, have been local anesthesia and the discovery of powerful nonirritating antiseptics. Rectal surgery, unlike that in most other parts of the body is antiseptic, not aseptic, and the failure of most of the operations that have been devised during the last three decades has been due to the fact that their originator either did not or would not accept this fact.

I find operators continually getting into trouble around the rectal outlet through suturing operations under the delusion that primary union is likely to be obtained. It is true that in a certain percentage of cases with great care this result may be obtained. Nevertheless it does not particularly advance the case and when, as usually happens, infection occurs, we have local abscesses, ulceration and a prolonged hospitalization.

In my experience drainage with antisepsis is the fundamental principle of all rectal surgery. Of course it is understood that the surgeon himself should use all standard procedures to approach asepsis as near as possible, if for nothing more than to avoid introducing extraneous virulent organisms onto the rectal field. The germs found in the rectum are rarely of a virulent type and septicemia following rectal operations, outside that for carcinoma, is practically unknown in the hands of a competent operator. Likewise, local infection and abscess are very rare, if drainage is provided by leaving the wounds in the anal canal and on the anal surface open, and even applying small gauze packing for a day or two to make sure of this in certain cases. The operative area should receive the same care as open wounds anywhere for several days until granulation is established.

The only way the field after a hemorrhoidal operation could be kept aseptic would be by producing a preliminary colostomy. Though we may scrub and clean and stop the passage of feces for several days, there is no way to prevent the passage of flatus. The patient is probably not yet safely tucked in his bed before some gas has been passed with the deposit of thousands of germs on the carefully asepticized area.

Local anesthesia has been a great help in hemorrhoidal surgery, for by its use the rectal outlet can be completely anesthetized with sufficient relaxation of the rectal sphincters to do any uncomplicated hemorrhoidal operation. Besides being safer than general anesthesia, it never produces nausea or vomiting, the latter being doubly distressing with an irritable tender rectum.

Local anesthesia has also given us a means of relaxing the sphincter muscles without the use of divulsion. Many times, unless deep anesthesia is produced, it is difficult without a severe divulsion to get a proper field in which to work, this being particularly true of nitrous oxide.

When a general anesthetic is preferred in hemorrhoidal cases, I never use anything but light nitrous oxide or ethylene anesthesia, this being supplemented with local anesthesia, the latter being used as follows: After the patient is sufficiently under the gas to be placed in the lithotomy position, 15 c.c. of a combined one-half per cent solution of novocain and quinine and urea hydrochloride is injected into each side of the anus. A 3½ inch needle is used and inserted about 1½ inches posterior to the anal outlet. With the left finger inserted in the anus as a guide, the solution is deposited about one-half inch deep, in such a way as to infiltrate the anal muscles.

The novocain relaxes the sphincters, at once thereby preventing the trauma incident to a forcible divulsion which is responsible for much postoperative pain. The quinine and urea produces an analgesia lasting several days which is a great aid in making the patient more comfortable.

There are two other things I would like to mention, regardless of whatever operative method is used. It is to warn against the use of the cautery on the anus or in the anal canal, or the suturing of wounds in these neighborhoods. This is a very sensitive area and doing either of the above leads to an increase of rectal pain, the probability of inflammation and abscess formation.

The natural pressure of the anal muscles will give sufficient approximation of the membrane surfaces, and anal wounds can be partially approximated by buried sutures without interfering with drainage. It is rarely that bleeding from either of these areas cannot be controlled by small gauze dressings and a tight T binder.

In regard to the care of the rectum after operation, my method is as follows: A small self-retaining urethral catheter, wound around with a few layers of gauze, soaked in 2 per cent mercurochrome solution, is inserted about two inches up the anal canal, then cut off so that the outer end protrudes one-half inch and is pierced by a safety pin. Small pledgets of gauze dampened in the same solution are packed around the tube in apposition with the external wounds.

Over this is placed a small wad of gauze which is held as tightly as possible in place with a liberal T bandage. The external gauze is changed daily and the small gauze pledgets and that around the tube are soaked daily with 2 per cent mercurochrome. After three days the tube and gauze are removed but daily aplications of mercurochrome are made with an applicator for a few days longer.

I find that, by observing the precautions mentioned, I am enabled to escape severe afterpains in most cases. In fact, whenever I find it necessary to give morphine more often than that which I give as routine before and after operation, my technic has been faulty.

In the third stage the injection treatment is contraindicated. As a palliative, because of the weakness of the sphincter muscles, the patient will not be able to retain the injected pile, and its protrusion shortly after treatment will lead to inflammation and necrosis and all the disagreeable features that go with this. It would not be curative, even if we could prevent the above occurrence, as the varicosities have become too large and the fibrous tissue deposit too extensive. There is, therefore, nothing left but operative interference.

Occasionally in these cases a complete or modified Whitehead is the operation of choice, especially when the external and internal veins are badly involved along with a certain amount of mucosal prolapse. As a rule, however, the prolapsed mass can be divided into four sections, each one dissected up and treated as a combined externointernal pile, as in the ordinary ligature operation.

I use the linen ligatures and, after tying off the stump and cutting off the freed mass of tissue, pass one end through the anal skin, tying it so as to approximate the stump and anal skin. When this has been done in the four quandrants, we will have gotten rid of the redundancy with a rather ragged incomplete approximation of the skin and rectal mucosa. These several slits or openings about the anal wall give perfect drainage and, if the aftercare in regard to cleanliness and antisepsis are studiously regarded, it is quite remarkable what a good result will be obtained.

The afterpain in these cases is usually slight, in spite of the fact that we have been forced to introduce sutures on the anal surface on account of the relaxation of the anal canal. The rectum should be examined several times during the convalescent period and, if any tendency to stricture appears, it should be prevented by moderate dilation while the granulations are soft. This uncommon type of hemorrhoids is met with usually in elderly people.

If local anesthesia is used, age is no contraindication and, except for the necessity of a longer hospitalization, they have little pain and do remarkably well. My average time for hospitalization, following operation for cases of the second degree, is five days, and for those in the third two weeks.

Stimson Building.

Study of Two Hundred and Two Cases of Congenital Syphilis. In a study made by A. Benson Cannon, New York (Journal A. M. A. Aug. 27, 1927), of 202 cases of congenital syphilis representing 181 mothers, it was found that the more recent the infection in the mother the more frequently the children were affected and the severer the type of infection. Only 23 per cent of the mothers had received treatment before or during pregnancy. The greater number of these cases represented the first pregnancy. The average age at which symptoms developed was between the tenth and fifteenth years. Ninety-one per cent of the patients were normal mentally. Interstitial keratitis was the most frequent symptom occurring in 35 per cent of the cases. Dental defects were the most common physical sign. The Wassermann reaction and organic luetin tests were strongly to moderately positive in all except two cases. Spinal fluid tests were positive in 10.5 per cent. The plan of treatment was continuous. There were fourteen cases of syphilitic nephritis. All were fatal and all were studied at autopsy. There were four cases of meningitis, all of which were fatal. Three were examined at autopsy. Only six out of seventy patients have become serologically negative, and these after from four to six years of almost continuous treatment with arsphenamine, mercury, iodide and bismuth. Usually when treatment was begun in early infancy, the Wassermann reaction became negative after about four courses of arsphenamine and mercury and remained so.

QUARTZ LIGHT AND DIATHERMY*

THEIR PRACTICAL USE

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Physiotherapy is the method of treating human ailments by physical means. Some physiotherapeutic methods, such as hot baths and massage, have been in use since ancient times. Others, such as light baths, contrast baths, etc., are of more recent origin. Among the latest developments in the field of physiotherapy are the x-ray and radium, the ultraviolet light, diathermy and other types of electrotherapeutic devices.

The use of x-ray and radium is now classed as a specialty and their therapeutic use is almost completely confined to those trained in x-ray and radiotherapy, so that we will not consider them. I wish briefly to discuss the use of two recent physiotherapeutic inventions, the quartz light and diathermy, which in Montana at least are used for the most part by the general practitioner.

QUARTZ LIGHT

The common use of the quartz light, known also as the alpine or ultraviolet lamp, during the last few years has been greatly stimulated and was probably primarily initiated by the wide-spread knowledge of the excellent results obtained since 1903 by Rollier of Switzerland in the heliotherapeutic treatment of both medical and surgical tuberculosis. The quartz light is a mercury vapor lamp surrounded by quartz which does not obstruct the passage of the ultraviolet rays, as does ordinary glass.

The violet ray is from 1860 to 4040, or approximately 2000 to 4000 Angstrom units in length. An Angstrom unit is one ten-thousandth of a millimeter in length. The ultraviolet ray is much longer and has much less penetration than either an x-ray or a radium ray. Speaking generally, quartz light rays are constructive and stimulating to body tissue, while x-ray and radium rays are destructive.

There are two types of quartz light machines in use, the air-cooled and the water-cooled. The air-cooled machine is used for general body stimulation, while the water-cooled is principally for local bactericidal or stimulative effect. Finsen has shown that the blood in the capillaries absorbs most of the actinic rays and it is because of this fact that we get a general bodily effect. Microorganisms vary greatly in their tolerance for actinic rays, as in their resistance to different chemotherapeutic agents, and the results consequently may differ considerably. Experimentally the gonococcus is the least resistant to the ultraviolet ray of any of the common organisms.

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* Read before the Annual Meeting of Medical Association of Montana, Missoula, Mont., July 13, 1927.

As with almost every new addition to our therapeutic armamentarium, the use of the quartz light has been exploited and there are hundreds of cases where overenthusiastic therapeutists have rushed prematurely into print to do battle for the new method. Various manufacturers have also essayed to get while the getting is good both from the physician and layman, and there can be purchased valueless so-called violet ray machines at almost every drug store, while thousands of dollars have been mulcted from the unwary by this method. It is my opinion that the quartz light machine has a very limited field of usefulness, and that there are very definite and limited indications for its use which indications cannot be properly evaluated by the inexperienced.

The three special fields of medical practice in which the enthusiastic quartz light therapeutists are especially active are tuberculosis, skin diseases and rachitis. I wish to quote first as to tuberculosis. Dr. Vidal of the Montana Hospital for the tuberculous at Galen says, "I consider the quartz light as a futile substitute for actual sunshine." Dr. Chatterton, surgeon in charge of the Minnesota State Hospital for crippled children, where tuberculosis accounts for approximately 50 per cent of their 300 patients, says, "We use the quartz light for about four months in the year but find it does not compare in therapeutic value with actual sunlight."

In regard to dermatologic therapeutics I wish to quote Scholts in the *Urologic and Cutaneous Review* for June, 1926. "Ultraviolet light helps clear up some local skin lesions, but even then other medications are necessary." Any case where malignancy is even suspected is an absolute contradiction to the use of the quartz light, as its slight penetration may cause a proliferation of the deeper malignant cells. An acute dermatitis is also a contraindication, as the condition may be severely exaggerated by the use of quartz light therapy.

Rachitis is the one disease where the quartz light is almost specific, although whether this is due to the added deposition of cholesterol in the skin, or to the increase in the amount of calcium and phosphate in the blood is still a mooted question. It is only fair to say that actual sunlight accomplishes just as much therapeutically in the treatment of rachitis as does the quartz light.

One of the greatest drawbacks to the use of the quartz light is the fact that as yet there is no method of accurately measuring the dosage any given condition may require. Each burner differs in the amount and intensity of the rays delivered. Individual skins vary greatly in their sensitivity and tolerance to actinic rays, so that no formula for the dosage to be given can be estimated.

Recently the irradiation of food by the quartz light has received considerable attention and has been especially studied by Steenbock, Hess, Eddy and others. This process is fortunately controlled by patents, as is the manufacture of insulin, and therefore protected against exploitation. It is definitely known that, while the irradiation of food adds to its antirachitic value, it may detract from it in other respects. For example, the irradiation of milk destroys the vitamine A, so that the wholesale irradiation of food products would probably be of more danger than of value.

I have not seen any surgeon's reports that have given the quartz light any especial praise in clearing up infected wounds, and the results we have had leads me to the conclusion that the benefit is usually small. We had one case of a large infected burn which seemed to heal more rapidly under quartz light than under any other therapy but I believe it was due more to the improvement in the patient's general condition than to the bactericidal action of the actinic rays.

In summation, I do not think that there is any condition, except a rare case, where the quartz light will give results that will not be excelled by actual sunlight. In the past, for much the greater part of the year, it has been difficult to give sunlight and still have the patient sufficiently warm. That difficulty will soon be eliminated. There are several companies now manufacturing substitutes for glazing which will not filter out the valuable violet rays as does our present glass. In the *A. M. A. Journal,* No. 20, Vol. 88, of the present year, is the report of the association committee on physiotherapy concerning these substitutes. Suffice it to say, they do transmit the therapeutic actinic rays, and it is probable that their use will become widespread and supplant to a great extent, except in very cloudy and foggy climates, the use of the artificial quartz light machine.

DIATHERMY

Diathermy is the passage of a high frequency current through body tissues. A high frequency current is an electric current, having such a high rate of oscillations of alternations that living tissues do not attempt to contract with each impulse, that is, it has no polarity. The ordinary alternating current of every day use reverses itself 120 times per second, while the modern diathermy machine produces 1,000 to 500,000 reverses or interruptions per second. The amperage is usually between two and three, and the voltage only needs be sufficient to carry the current through the thickest part of the body.

To Nikola Tesla, the American electrical engineer, belongs the credit of first suggesting the use of this high frequency current in medicine. D'Arsonval, a Frenchman, has the honor of having done most of the experimental work on muscle contractions in high frequency currents, while Nagelschmidt, a German physician, first began applying the high frequency current to the human body and advised its use in the treatment of various types of arthritis.

The effect of diathermy is based on the fact that heat is generated in the tissues, and it is because of the very accurate control and localization of heat that it is valuable. The heat is controlled by the size of the electrodes, the type of tissue traversed and by the strength of the current. The current density is greater near a small electrode than in the region of a large one. Therefore, there will be more heat produced in the region of the small electrode. If the electrodes are of equal size, the greatest amount of heat will be produced equidistant from them. Joule's law, that the "heat produced in a conductor by the passage of an electric current is in direct proportion to its resistance," holds also in the passage of current from a diathermy machine. Fat, fascia and tendons are approximately three and a half times and bone fourteen times more conductive, and, therefore, less heat is produced in them than in muscle or blood.

Medical diathermy, so-called, is where the heat produced is nondestructive of tissue. There are three groups of clinical cases in which diathermy is indicated:

1. Where an increase in local metabolism as produced by active hyperemia is desirable, as in the chronic arthritides.

2. Where the sedative action of heat is desirable, as in neuralgias and arthralgias. The Germans have emphasized its value in the relief of spasmodic conditions, such as the fibrillations of muscle fibres in various types of paralysis.

3. The bactericidal action of heat on pathogenic organisms, especially the gonococcus.

I wish to give some of the conclusions of myself and my associates in the use of diathermy in the commoner diseased conditions: In the acute infections, such as pneumonia, influenza and tonsillitis we have been unable to demonstrate any peculiar advantage which diathermy has over other methods of treatment, although in some cases the sedative action of heat is very soothing to the patient.

In gonorrheal infections we have found some cases, about forty per cent, that responded very nicely, principally in the male adult. The other cases showed no benefit whatsoever. In the gonorrheal vaginitis of little girls we have had five failures to one success.

In the chronic and subacute arthritides the results have been very much better, especially for quick relief of the discomfort. We do not use or feel that it is safe to use it in acute arthritis because of the contraindications as will be given later. In some cases of neuralgia and arthralgia the results have been fair, but the salicylates will usually give as quick and also more permanent relief.

In acute neuritis, herpes, acute spastic torticollis and in recurrent pleurisy the results have been very satisfactory. I would also mention the fact that many cases of chronic constipation from atony will respond nicely, and if it is possible to maintain the treatments over a sufficient period of time, together with regulation of diet, habit, etc., the end-results will be good. We use the diathermy only where heat is definitely indicated, and it is used simply as an adjuvant, not as the sole method of treatment.

In surgical diathermy, often times called electrocoagulation, various degrees of heat are generated according to the laws above given and at the discretion of the operator. It is used principally in vascular condition, such as nevi, warts, polyps, carbuncles, hemorrhoids. The method is of considerable importance where loss of blood is a prime consideration. The advantage over the Pacquelin cautery is that with the diathermy machine the heat is generated in the tissue itself and not radiated from a red hot instrument.

There are two great contraindications to the use of diathermy: (1) The possibility of dangerous toxic materials being absorbed into the blood when treating infections, which we feel is an absolute contraindication to its use in any condition where pus may be present. (2) The possibility of starting hemorrhage, due to severe arterial hyperemia.

In conclusion, and with reference to both the use of the quartz light and diathermy, I would say for the benefit of your clientele: (1) Have very definite indications for the use of these therapeutic agencies. (2) Be sure that you do not overlook the contraindications. (3) Try older and better known methods of therapeutics first. (4) Be not too optimistic to your patient as regards results.

For your own benefit, I would say: (1) Do not take the words of the manufacturer's representative or the supply house representative as law concerning the therapeutic uses and results of the quartz light and of diathermy. Their use is limited and the results far from certain. Remember that the quartz light is only a substitute for sunshine and the diathermy only a method of applying heat. (2) Do not buy a machine because your competitor has one. He probably would be very glad to sell you his.

Autopsy in Private Practice. Frederick C. Smith, Marion, Ohio (Journal A. M. A., Aug. 20, 1927), relates his experience in this field. For the first seven months of this year he had twenty-four deaths, Twenty-one of which were examined, bringing the rate for this year up to 87.5 per cent. Marion is a small city of 34,000 inhabitants, with no facilities for doing necropsy work. The physicians are compelled to do this in the homes and in the morgues of the local undertaking establishments, mostly in the former, because people generally are still adverse to having their dead removed from their homes. Since undertakers are encouraging the removal of the body to the morgue, it will perhaps not be long until this becomes a common practice. This will make the possibility for autopsy work more favorable. Regardless of the cause of death, whether the diagnosis is clear or not, Smith asks permission for a postmortem examination. The examination is always made as complete as possible. The brain is not removed in all cases, but it is examined whenever it is considered necessary to arrive at a correct diagnosis. Smith is certain that the public is not as much opposed to necropsies as physicians generally believe. It appears that the laity is more appreciative of the need of autopsies than is the medical profession itself. People often express themselves as wishing that an examination had been made on some member of the family who had died. Possibly this was not conveyed to the attending physician at the time of death, but it goes to show which of the two had the greater interest. And it is not unusual to learn of cases in which the family suggested to the physician that an autopsy be made and still it was not done. But it is in discussing with people generally the question of necropsies, and particularly in explaining to relatives and friends just what was found at the examination, that one learns of the interest shown by the public. People appreciate a sincere and earnest effort to get at the bottom of diseases that caused the death of their relatives. And it is one of the greatest satisfactions to the physician to be able to explain to them all than can be known about the nature of these diseases. In nearly every instance, after the necropsy has been made and the observations are carefully explained, people express their satisfaction and appreciation in learning the truth.

THE HUMANIZING INFLUENCE OF PESTILENCE *

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Perhaps it might be well at this meeting to repudiate the suggestion that the title of my address reflects in any way on the wholesomeness of the meal we have just eaten. Nor does the sombre subject bear any relation, as might be thought from my previous discourse, to gastric psychology. I am indeed a gatherer of tales of medical romance and this that hangs on my tongue's end is one of them.**

The title was given in a burst of enthusiasm, for I had been engaged in resolving into modern speech one of the most human documents I have ever read. It was written in 1485 by Bishop Bengt Knutsson of Västeras in Sweden, a versatile man, physician to boot, trained at Montpellier. It is the first book printed in London with a title page, for printing was a very new method of reaching the people in those days. The first press had been set up in England less than a decade when our good bishop brought out his work. And his opening salutation in its vigor and benevolence sounds like the fanfare of the heralds of good tidings. "At the reverence and worship of the blessed Trinity and of the glorious virgin Saint Mary and the conservation of the common weal of all christian people, as well for them that are whole as for remedy of them that are sick." I should like to have met this physician of Montpellier who, in his struggling days, wandered from house to house, as he himself tells us, penniless like those poor patients of his who could not escape, with loving kindness in his heart, the inspiring confidence of courage in his voice and a sprig of sweet smelling herbs in his hand. He was, indeed, the type of physician who plucks the jewel from the head of adversity and extracts his staunchest hope from the tragedy of disease.

We have traveled far from anatomy of tradition during these three days at Boise, and yet perhaps not so far from anatomy of the future. King Argimenes, condemned to the slave fields, bowed, ragged and dirty, could still shout, "This is a good bone; there is juice in this bone."

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* The banquet address delivered at the meeting of the Sixth Annual Meeting of Pacific Northwest Medical Association, Boise, Ida., June 27-29, 1927.

** The author has made every effort to secure accuracy of essential fact and faithfulness of interpretation in this study, but he has not hesitated to draw freely upon writings such as those of William Morris, Filson Young, Hilaire Belloc and Charles Brooks, to give the atmosphere and flavor of the times.

They were great days, these, the summit of the Middle Ages. It was already three hundred years since Christendom awoke out of its lethargy. The stonework of Western Europe, which rose fresh and white after the stimulus of the Crusades, with its pointed gothic arches, was now weathered and old. The University of Paris and the Schools of Oxford dated back almost as far. Saint Bartholomew's hospital was three centuries old already. It was a hundred years since the Peasants' rebellion in England had changed the face of society, and the suppression of the Jacquerie in France had planted the seeds which burst into life much later in the French Revolution.

It was a period of ease and the zenith of philosophy. Mantegna was engraving on copper. Donatello was reproducing in bronze "the anatomy of the miser's heart." Leonardo was inscribing in pictorial form the new anatomy. In Ruskin's terms these men were polluting their art with the science of the sepulchre. The men of that day looked upon themselves with very much the same satisfaction that we look upon ourselves in this enlightened age.

Wonders were developing with dazzling rapidity and, though many held the crack-brained Columbus to be a fool, it was but a few years before the vision of the New World burst upon their astonished gaze. "What does the fellow say," wrote Luca Sarto, "but that the world's a globe, that it is shaped like a huge tart and is plattered in space. But also this tart is always spinning, and what lies eastward on the platter whirligigs to west. It is blasphemous coggery. This Christopher Stand-on-His-Head ruffles me."

There is nothing which illustrates better the pinnacle of confidence which was attained by philosophy in the Middle Ages than this fact that a man, in a strange land, without knowledge of the classics or the Fathers, having no other argument than his own fixed belief and some vague tales about bits of wood and shipwrecked mariners, should be able ultimately to secure the influence and funds for taking a flotilla right out into the Sea of Darkness and down that curving watery slope, up which none ever climbed before.

Yet at the heart of all this prosperity and splendor and activity in thought and art there was a canker, the canker of pestilence. A century and a half earlier, creeping insidiously along the Mediterranean shore, the basilisk had wormed its way into Europe, blasting everything in its path with its poisonous putrid breath.

Upon a morning in 1348 Boccaccio in Florence, looking from his window, saw two hogs rooting among the rags of a poor man just dead, and shaking them about in their mouths, "when they both turned round and died on the spot." The sickening rats rushed from their holes and crevices in troops and, "issuing on to the floors, sprang continually upwards from their hind legs as if they were trying to jump out of something." Penitent and confessor were borne together to the same grave and funeral earth, chapped and ghastly, bulged over her new buried corpses.

Petrarch, like his friend Boccaccio an eye witness of the Black Death in Italy, foresaw the inability of future generations to imagine the empty houses, abandoned towns, fields crowded with dead, the solitude of the world. "Is it possible that posterity can believe these things," he writes, "when we who have seen them can scarcely believe them?"

The Black Death arrived at the critical moment when English social customs were maintaining with difficulty their traditional form. The problem of villeinage was occupying the public mind. There was no land hunger in those days. The towns had not yet begun to be the dominant factor in civilization. The worker was land-bound and sought to be free. So, when after 1348 his numbers were reduced by half, in spite of the Statute of Laborers, wages were permanently raised and freedom of migration was secured for the hinds of the Manor. As the land owners died and estates fell in, the new yeoman and farmer class, afterwards so powerful in the fifteenth century, grew in strength by the accumulation of recruits from below. The business of the courts greatly increased and pettifogging lawyers, hated by the peasantry, swarmed over the land, "men who had no souls but only parchment deeds and libels of the same."

The impetus given to the workers developed the trade guilds of the towns. And so the entire structure of society was convulsed. Settlement awaited the Peasants' Revolt of 1381 but though this was suppressed, the humanizing elements which leapt out of the pestilence could not be defeated and the modern social order struggled at last into the position in which it remained secure until these troublous times of ours.

These were not men of a strange race or culture. The time, though distant across the centuries, is one with ours. And we also can be stirred as were John Nameless and John the Miller and John Carter that early summer evening in 1381 at Mitcham green, when the reflections of John Ball fell softly on their listening ears. How "men fight and lose the battle, and the thing that they fought for comes about in spite of their defeat, and when it comes turns out not to be what they meant, and other men have to fight for what they meant under another name." "John Ball greeteth you well all and doth you to understand that he hath rungen your bell."

But, intermittently, from that year onward the Black Death scourged all Europe for 300 years and calamity marched step by step with progress.

The theory of contagion gradually developed itself in the public mind and by the sixteenth century became the basis of legislation for protection, not of the people in general, but of the court. However, specific measures quickly followed for isolation of the sick and protection of the populace.

The infected house was shut up with a large red cross and "Lord have mercy upon us" painted on the door. Watchmen, attending day and night, prevented anyone going out or in except physicians, nurses and searchers prescribed by Authority. These precautions were to continue, as the edict had it, until a month after all the family was dead or recovered.

Progress is slow to start and when it moves is apt to trample human hearts. So to the prisoners in the house, "strangers," as Mead wrote in his famous discourse (1720), "to everything but the melancholy sight of the progress Death makes among themselves." "Lord have mercy" must have seemed a curse and the four walls of their prison the very jaws of the tomb itself.

Of the last great plague in England, that of 1666, the newspapers of the day were full. Extracts from these were thrown together by Daniel Defoe of Stokes Newington in the form of a journal. This Daniel Defoe, whom we know so much better because he learned the adventures of Alexander Selkirk and went to school as a boy with another little lad called Timothy Crusoe, was a kind of combination of H. G. Wells and Bernard Shaw. They made him church warden, knowing that a dissenter he would rather pay the fine of ten pounds than assume office. Vividly and faithfully does Defoe tell of the people crazed by constant communion with unspeakable death, dashing from their houses to end their life in the Thames and so escape the worse horror which drove them on.

Even the incorrigible Mr. Pepys breaks away from his vainglorious jottings to recount how there appeared before himself as magistrate "a very able citizen in Gracious Street, a saddler who had buried all the rest of his children, himself and wife now being shut up and in despair of escaping, who did desire only to save the life of this child, and so prevailed to have it received stark naked into the arms of a friend who brought it to Greenwich, where we did agree it should be permitted to be received and kept."

So in the course of time humanity prevailed. Mead in 1720 advocated the abandonment of these terrible measures and proposed instead the establishment of hospitals outside the towns, and the isolation of cities rather than of homes. It was Mead who persuaded Guy to found the hospital which goes by his name. He was a man of unbounded hospitality who spent his afternoons in a lucrative high class practice and his mornings prescribing for patients whom he had never seen, at half guinea fees, on the written or verbal reports of apothecaries. Mead's reforms were bitterly assailed and the next year nullified by act of Parliament.

But of all the hard things said of Mead none surpasses in vigor or in scorn the invective of Noah Webster, the lexicographer, who set to work with a mind enlightened by the sources of words to seek the origin of pestilence. An ill-humored fellow this Noah, who must have suffered from some kind of duodenal irritation. "Sound potatoes from the market," he writes, "perished in my cellar in thirty-six hours." So from this he goes on to larger issues. "In the United States, everything that has been done hitherto in the construction of cities is in imitation of the old European mode, and of course is wrong." To such sweeping generalizations may a bad potato lead. Nevertheless, even to Noah pestilence was a blessing in disguise, for it "humbles the pride and arrogance of man, by creating in his mind a perpetual dependence on divine power; in short, it creates and preserves that sense of obligation and accountability to God which is the germ of piety and moral excellence."

But all journeys end in the twilight and the angelus interceding for preservation from pestilence closes the day. "Sweet scent," writes Luca Sarto, "wards off the plague better than the killing of a hundred jews."

So I would hark back to my bishop, counselling the rich to leave town, breathing comfort and hope for the poor who, bound by circumstances, may not escape from the overcrowded city. "To be merry in the heart," he says, "is a great remedy for health of the body. Therefore, in time of this infirmity beware ye dread not death, but live merrily and hope to live long." Of all documents on the pestilence this is the most moving and the most human. It is the physician as counsellor and sympathetic father-confessor who can see beyond the veil, like John Ball the hedge priest of 1381, that "he who doeth well in fellowship shall not fail, but in days hereafter shall he and his work yet be alive and men shall be holpen by them to strive again and yet again."

AN UNUSUAL MASTOID CASE*

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EUGENE, ORE.

I wish to report a case of mastoiditis which seems to me to have some unusual points of interest.

The patient, a man 48 years of age, was a saw-filer in a lumber camp. Before this illness he was a vigorous, healthy man of spare build and no bad habits. His trouble began March 10 with an attack of influenza, which was at that time very prevalent in the camp. After two weeks care in his home, he was brought to the Eugene hospital still a very sick man, complaining especially of general aching malaise and productive cough.

His temperature was 101.4° and he felt chilly. The next day he complained of aching in the right ear. Hot water bottle offered very little relief. At this time I examined the drum and, finding it inflamed and bulging, performed a paracentesis which liberated a large amount of serosanguineous fluid. The quantity seemed prodigious as in the course of the day large gauze pads would be soaked. There was considerable mastoid tenderness, especially of the tip and even as low as the styloid process. The tenderness in the antral region soon disappeared as the drainage progressed and later it completely cleared.

During the next week the temperature fluctuated, reaching 102° at one time, but generally ranging between normal and 101°, finally running level for three days before leaving the hospital. He was now feeling well and had a good appetite, although he was still weak and the ear was discharging profusely. There was no mastoid tenderness.

Nine days after leaving the hospital he returned to work and worked for nine days. During this period, although his temperature was frequently taken, he had no rise. He felt well and had a good appetite. The last four days, however, he noticed a swelling above and behind the ear and a little tenderness on pressure.

At this time. he again consulted the writer. The temperature at 7:00 p. m. was 99°. Examination disclosed a marked swelling at the root of zygoma, some tenderness in this region and distinct sagging of the posterosuperior wall of the auditory canal. The discharge was profuse, very stringy and of a greenish color. The odor was not fetid. A smear showed only pus cells with diplococci and staphylococci. The culture showed pure staphylococci. The patient returned next morning with temperature normal but other symptoms the same and operation was decided upon. Diagnosis: Acute mastoiditis with subperiosteal abscess.

Aside from the attack of influenza already mentioned, there was nothing either in the past history or family history of any significance. At this time also the physical examination showed nothing except the local manifestations, a profuse discharge through an oval paracentesis opening in the drum, a sagging posterosuperior canal wall and a swollen, red and tender mastoid.

Operation was done the next morning. The mastoid was opened in the usual way. There was no periosteal abscess, merely a large amount of edema. When the cortex was opened, pus under pressure welled up and filled the wound. The cellular structure of the mastoid was found entirely broken down and, in the midst of the debris of pus granulations and bone detritus, a sequestrum roughly about 2 x 1 x .5 cm. in size was found. This was grasped with thumb forceps and lifted out, thereby uncovering the lateral sinus. The inner surface of the sequestrum was concave, being apparently the outer wall of the sinus. The dural wall of the sinus appeared healthy. All the diseased cells were thoroughly curetted, including those at the zygomatic root and the mastoid tip, the wound was packed with iodoform gauze and the upper two-thirds of it closed with sutures. The patient was returned to bed in good condition. The temperature at 4:00 p. m. (three hours after the operation) was 99°. Aside from a little soreness in the neck and mild nausea the patient was comfortable.

The next afternoon the temperature rose to 102°, dropped to normal next morning, only to climb to 102.2° in the afternoon. The white blood count was 15,750. The iodoform packing was removed and replaced by a light gauze drain. The following day the temperature fluctuated but was never as high. The next day, it rose only to 99.2° and the patient was very comfortable.

The next day, April 28, the temperature rose to 102.6° and the patient complained of severe headache. White blood count was 37,450. On the 29th, the temperature reached 105° at 4:00 p. m. and the white blood count was 30,000. At midnight the temperature was 97.8° and sweating was profuse.

Fearing lateral sinus involvement, the patient was taken to the surgery, the wound reopened and consultation held. Finding the granulation over the sinus in very healthy condition, and the same time some rales in the lungs, it was decided to await further developments. At this time blood culture was negative. The absence up to this time of any well marked chill was considered noteworthy. The patient was given ½ c.c. of Mulford's mixed influenza vaccine and thereafter every day for six days was given a like amount.

For two more days the temperature continued to fluctuate widely, each intermission being accompanied by a drenching sweat. There were no well marked chills, although the patient admitted some chilliness. Being unusually optimistic, he generally denied all serious subjective symptoms and declared each day that he was feeling better. From May 2 on the temperature continued to hover around normal, although the sweating continued, especially at night. The wound healed rapidly and the discharge was scanty. The patient was dismissed from the hospital May 9, but returned every day for dressing. Healing was uninterrupted except for excessive granulation, which required cauterization.

COMMENT

The case is interesting for several reasons.

1. The complete abatement of pain and tenderness after the initial symptoms had pointed unmistakably to extensive involvement of the mastoid.

2. The sequestrum and extensive necrosis also pointed to a severe and continuous pathologic process. In the literature at hand I have found no mention of a sequestrum in the mastoid and it

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* Reported from Eugene Clinic.

would seem that the pneumatic structure of the bone would hardly lend itself to sequestration.

3. The healthy condition of the lateral sinus after having been in contact with the suppurating dead bone for an indefinite period. If it were involved in any way, it cleared later without surgical interference.

4. The stormy period of septic temperature and sweats following the operation pointed, it would seem, more clearly to thrombosis than to the lung involvement, which nevertheless subsided and ended in perfect recovery. The patient is in the best health he has had for a long time and the hearing function is only slightly impaired.

Institution Best for Most Mental Patients. The decision as to which mentally ill patients should be in an institution and which ones may be cared for at home is not an easy one to make, declares Dr. L. D. Hubbard in the current *Hygeia*. Patients who are not violent, but merely feeble or senile, apparently could live at home.

However, these very helpless patients require so much physical care themselves that it is almost impossible to keep them at home, even with the most devoted and willing families. Actual skill and knowledge as well as devotion are required for their proper care.

In another type of mental disease long remissions frequently occur, during which the patient is apparently well and the lay person cannot understand why he must remain at an institution. However, symptoms might at any moment occur which could cause hideous calamity. Such patients are not safe, nor is society, unless they are under constant supervision.

The presence of children in the household is another condition that makes unwise the return of the mentally ill patient, even though he is not violent or dangerous in any way. Children cannot adapt themselves readily to psychotic outbursts of temper, tears or silliness in one whom they have regarded as the ideal of character and behavior.

Need Medical Advice to Find Tuberculous a Job. When the patient with tuberculosis leaves the sanatorium, his first problem is one of adjustment to the environment of every day life; his second is the choice of an occupation. For this he must have medical advice, not only as to the kind of work to do but as to how the work affects him after he begins it, declares an editorial in *Hygeia*, the health magazine published by the American Medical Association.

The question of hours, wages, working conditions, type of work and provisions for his future, in case he should suffer a relapse, all need to be considered when he starts working.

Yellow Fever. Yellow fever appeared in epidemic form in the states of Bahia, Minas Geraes, Rio Grande do Norte, and Parahyba, Brazil, during 1926. Measures for the control of this disease had been inaugurated in Brazil in 1923 with the help of the Board. By the close of 1925 reports of cases had practically ceased, so it was felt that the antilarva activities in several of the coast cities might safely be discontinued; but early in 1926 stations were still being maintained in three large coast cities—Fortaleza, Ceara; Recife, Pernambuco; and Sao Salvador, Bahia.

Late in 1925 a band of rebels worked its way north from Southern Brazil into the old yellow fever area. Information gathered by the field staff of the Yellow Fever Commission after the disturbance had subsided shows that some of the federal troops, composed for the most part of men who were nonimmune to yellow fever, became infected and that several died in the hospitals of the principal cities, furnishing presumptive evidence that smoldering infection still existed in the interior which was augmented and spread by the passage of troops through the area. Antilarva work was resumed at once, and by the middle of May, 1926, the situation was again well in hand.

Yellow fever is still present in the country, as the occurrence of a few scattered cases indicates, but with the reduction of the larval index to a point well within the limits of safety in all the key towns, the danger of another general outbreak is minimal. Except for the cases in Brazil no yellow fever was reported in 1926 in the American continents or in neighboring islands.

A commission was organized in 1925 to study the characteristics and epidemiology of yellow fever in West Africa and its relationship to the fever of the Western Hemisphere; to attempt the isolation of the organism which causes the disease; to discover the method of transmission; and to identify those areas in which the disease is continually present.

During 1926 surveys were made in Southwestern Nigeria, the Niger Delta region, and the Port Harcourt area in Nigeria, and on the Gold Coast. The results of the studies are as yet inconclusive. The *Aedes aegypti* is present in sufficient numbers to serve as vector. The apparently sporadic occurrence of the disease might be explained by local conditions. As yet endemicity of the disease among the native population has not been established. Attempts to isolate the infective organisms or to transmit the disease experimentally have been negative and the serologic tests only slightly suggestive. Before inaugurating control measures on the West Coast of Africa, therefore, further studies must be made of the nature of the disease and of the conditions under which it is maintained and spread. (*Information Service of The Rockefeller Foundation, August* 22, 1927.)

Preceptorships. It is the belief of Nathan S. Davis, III, Chicago (Journal A. M. A., Aug. 20, 1927), that the time has arrived when something should be done to teach the art of medicine. Some have suggested that courses in the history and art of medicine be made obligatory as are courses in medical jurisprudence; but students would learn very little of the art of medicine from lectures or a textbook. Would not a return to a system of preceptorships, modified to fit the times, accomplish much more? It would be advisable to have each student assigned to perhaps three members of the faculty who would be his special advisers, say to an internist, a surgeon and an obstetrician or other specialist, so that his training would not be too limited. The preceptor group would help correlate the work of the preclinical and clinical departments; would advise as to the reading of current medical literature, medical biography and history; would assist in the preparation of schedules especially in the choice of electives; would direct investigative work, and, above all, would really get to know their students, whom they would follow through their whole medical course. If instruction in routine urinalysis and blood counting was given in the first year, students could at its close start working with one of their preceptors or with a practitioner approved by them as laboratory assistants.

DEMONSTRATION IN MALARIA CONTROL. After satisfactory demonstrations that malaria could be controlled successfully and economically in areas of dense population and high per capita income, the Board withdrew from this activity and attacked the much more difficult problem of malaria control in rural areas where the population is sparse and the percapita income low. General mosquito control is not feasible under these conditions, nor did it even seem possible in many areas to control Anopheles. Further studies have indicated, however, that only one of three common Anopheles of the United States, namely Anopheles Quadrimaculatus, is responsible for the transmission of malaria. Since the seasonal prevalence of this mosquito is known and also the preferential breeding-places, it is quite possible to concentrate on the destruction of this one species and to ignore all others, thus securing control of malaria at a reasonable cost even in sparsely settled areas.

It is obvious that malaria control in rural areas will not be so rapid, so spectacular, or so complete as was the case in the demonstrations in municipal malaria control. The program can best be carried forward in counties having full-time health service which is conducting all phases of health work and featuring malaria control only in those areas where it is of real economic importance. During 1926 the Board formulated a tentative plan of malaria control on the basis of the county as the unit. This program, which is a compilation of the experiences of successful malariologists and of public health administrators versed in malaria control measures is being tried out in various Southern States. In the course of the year the Board aided malaria control in the Southern States through contributions to the central health bureaus of seven staes where malaria is a problem, and also assisance to twenty-six county health unit budgets. The method of procedure is one of gradual attrition rather than of mass frontal attack; but it is believed that the strategy is sound and, if continued systematically and persistently, is sure to result in a definite reduction in malaria in the rural districts.

The year's malaria program included also cooperation in control demonstrations in Porto Rico; in the province of Tucuman, Argentina; in Italy; in the state of Rio de Janeiro, Brazil; in the province of Caceres in Spain; in Palestine; and in the Philippine Islands. (*Information Service of the Rockefeller Foundation, Aug.* 22, 1927).

MEDICAL EXAMINER SYSTEM. Timothy Leary, Boston (Journal A. M. A., Aug. 20, 1927), asserts that the coroner in this civilization is an anachronism. A necessary element in the primitive police systems of early Anglo-Saxon and colonial governments, he has no place in modern governments. His duties require him to be an expert in both medicine and law. The duty of determining whether the death of a human being was due to criminal violence or not is a purely medical function; the decision as to who caused the death is a legal or judicial function. The development of police and judicial systems under modern conditions has produced a mechanism for dealing with the criminal taking of life which renders the coroner's functions unnecessary. "The coroner system is a remnant of past and obsolete usages, and is wholly unsuited to the needs of the present times." Because of scandal that arose in the coroner system in Massachusetts, the Massachusetts legislature, in 1877, abolished the coroner system and established the medical examiner system. This system divides the duties of the coroner. It places the purely medical responsibility of investigating the cause and manner of the death on a medical officer, who is known as the medical examiner. He reports his findings to the police, the district attorney, and the courts. The legal responsibility of determining who caused the death is placed, where it belongs, on the courts. Inquests are held by courts of first instance, in the counties or districts where bodies are found. Fifty years' experience with the medical examiner system has brought out the possibilities of close coordination and cooperation between the medical examiners and the police. Pride of service has led to the acceptance of appointments by higher grade medical men than were associated as coroners' physicians or even as coroners with the old regime. There have been errors in observation and in judgment, human errors, but at no time have scandals arisen such as marred the record of the coroner service. The successful working of this procedure has led to its adoption by the other New England states, excepting Connecticut, and by the state of New York. The system makes for simplicity, utility and efficiency.

AUTHOR ATTACKS LOGIC ON ANTIVIVISECTIONIST. The opinion of a philosopher like H. G. Wells on the thought processes of a group like the antivivisectionists is apt to be both interesting and enlightening, declares Hygeia in an editorial comment on Mr. Well's recent article in the New York Times magazine.

Mr. Wells, with many medical scientists, objects to the term vivisection for experimentation on animals made for the sake of knowledge to be gained thereby. Most of these experiments involve no cutting about and very little pain. More pain is inflicted on the first day of pheasant shooting than by all the scientific investigators of the world vivisecting for a year.

Mr. Wells points out that the antivivisectionists do not attack the trade in toy animals nor the importation of monkeys as pets. Perhaps they do not realize how much more torture is such an unnatural life than any of the experiments performed by the scientific investigator.

The mode of thought of the "anti" is characterized by Wells as an honest delusion, the outcome of a peculiar mental make-up and not a wilful inconsistency. The antivivisectionist does not hate pain as such but pain inflicted to gain knowledge. He is afraid of bare reality as a child is afraid of a skeleton.

COEXISTING TYPHOID AND MALARIA. The literature contains many instances of the coexistence of typhoid and malaria in the same patient, especially in malarial districts; and typhoid, while not the only condition that lights up a latent malaria, appears to do so more frequently than other infections, perhaps because of the severe strain of a wasting disease on the functions of the body. Most frequently the typhoid is the dominant disease, lighting up a latent malaria. The malarial paroxysms, however, may alter the typhoid temperature curve at the onset, during the course, or, most frequently, during convalescence. Lewis H. Hitzrot, Philadelphia (Journal A. M. A., Aug. 20, 1927), found that of 543 typhoid patients in a Philadeplhia series, only two gave clinical and laboratory evidence of superimposed malaria. A third case, reported by Hitzrot, differs from the large majority of recorded cases in that the malaria, at least while the patient was in the ward, appeared to be dominant. The temperature curve resembled that of double tertian infection, with tertian parasites demonstrated in the blood. Simultaneously, cultures of B. typhosus were obtained from the feces and urine; and the Widal reaction, which had been negative on entry, eight and twelve days later was strongly positive. This, and the dispatch with which the organisms disappeared from the excreta under treatment, are evidence that the patient was not merely a typhoid carrier. The course of the illness described was mild while under observation.

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EDITORIAL

DEVELOPMENT OF THE MEDICAL LIBRARY

After graduation from medical school and a period of hospital service, the great majority of physicians settle for practice in localities more or less distant from sources of medical information, where they are out of touch with the leaders of the profession. Left to their own resources and able only at intervals to visit the medical centers, they are dependent on medical literature for information regarding medical progress and the means of keeping up to date in their professional experiences. Since no individual can hope to be thoroughly supplied with journals and textbooks, the only means of accumulating this source of knowledge lies in the medical library, which is capable of supplying the needs of the profession within a certain radius.

The prevailing method of sustaining such a library is provided either through the supervision of the local medical society, whose members are assessed an annual amount for development and maintenance, or it is established and controlled by a library association, whose members voluntarily contribute certain sums in the form of periodical dues. One difficulty with the first plan is the inherent objection on the part of many physicians to being assessed for an object in which they profess no personal interest. Under the second system the institution is supported by those individuals who have an earnest purpose in its maintenance. Whichever plan may be adopted, as the library develops, more funds are demanded than can be obtained from its medical supporters. The experience of all worthwhile libraries has shown that adequate expansion can be secured only through interesting laymen of scientific and philanthropic dispositions, who may be persuaded to endow the library that it may possess a permanent location, and additional funds may be provided for building purposes, literary expansion and expenses incident to maintenance on a larger scale.

The leading medical libraries in our larger cities exist as permanent evidence that men of wealth can be interested in providing funds for this object. Such great libraries as that of the Academy of Medicine, New York, The College of Physicians, Philadelphia and the Boston Medical Library have all been made possible through the generosity of wealthy men, largely outside of the medical profession. They have realized the educational advantages thus accruing to the medical profession, with the resultant benefit to the health and prosperity of succeeding generations in their respective cities. On a smaller scale is the magnificent library of the Cleveland Library Association, recently completed, which is a real gem among library buildings. One cannot visit these libraries, noting their incomparable collections of valuable medical books, without envying the profession of these cities who have access to such priceless medical literature. If he has at heart the welfare, the future growth and development of the profession in his own community, he cannot but visualize with ardent hopes and expectations the establishment and maintenance of such an institution in his city. This attainment is possible for any of our prosperous and growing cities, where men of wealth should have presented to them this possible means of civic betterement and improvement, with the opportunity of associating their names with a permanent memorial, testifying to their interest in the promotion of the future health and wellbeing of their fellow citizens through this means of advancing the usefulness of the medical profession during the years of the future.

A STATE CANCER HOSPITAL

As an indication of the wide-spread interest which has developed in the cancer question among laymen as well as physicians was the formal opening on June 21 of the Pondville Hospital at Norfolk, Mass., constructed and to be maintained by the state.* The institution consists of eight buildings occupying 1200 acres of land. It is equipped with all modern apparatus and methods for the treatment of cancer in various stages. In conjunction with the hospital twelve clinics are located in cities tributary to it for the service of the local communities.

The efficiency of this enterprise will be enhanced by the opportunity of assembling a group of specialists in all branches of the cancer investigation. Thus this cancer hospital is organized to accomplish everything possible in dealing with the cancer problem from whatever source information is available. Cancer in all stages, from its earliest recognizable forms to the advanced stages, will be received and treated with the object of cure when possible and amelioration of symptoms in hopeless cases.

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* Campaign notes of the American Society for the Control of Cancer. Vol. IX, No. 8, August, 1927.

Emphasis is continually placed on the increase of cancer. Thus the latest returns from the United States census announce over 103,000 deaths occur annually from this disease, with 300,000 continually suffering from it. The figures show that more people die of cancer than from all other diseases put together excepting tuberculosis. It is recognized that lack of knowledge among the public is one of the chief handicaps in combatting this disease. In spite of the vast sums annually expended in research and the attempts to control this malady, the problem seems as far from solution as at any time in the past. Institutions such as the one under consideration will be effective in imparting knowledge to the public regarding the early recognition and consequent possibility of relieving cases of cancer. The clinics mentioned above will not conceal their identity under any camouflaged title, but will be known as cancer clinics, thus aiming to remove the popular prejudice against the word cancer, with the purpose of persuading the public to be on guard for this condition in its incipiency. It has been stated that the good already accomplished by some of these clinics has consisted in the amelioration of late cases, the possible cure of early ones by operation and the unspeakable relief of those having no cancer who have been terrified with the belief that they were victims of the disease.

This initial enterprise on the part of a state to deal with the cancer problem will be observed with interest by every other state in the Union. If the problem were undertaken on this large scale under state authority in other parts of the country, it would not only increase the possibility of accomplishing real results, but would be an active and visible influence in the suppression of quackery and many fraudulent institutions that thrive more vigorously in the treatment of this disease than any other to which human flesh is heir.

THE DOCTOR AS A SUCKER

It is a well known fact that the medical profession presents a most fertile field for exploitation on the part of the promoter of undeveloped and unrecognized business enterprises, who hopes to enrich himself by the sale of stock to the unwary. Let a well dressed, glibly speaking, polished appearing gentleman offer to sell stock as a favor in a mine, oil well or electric industry to average physicians, with the convincing arguments that this will develop the profits of Standard Oil or the Bell Telephone, and a large proportion of them will at once fall as suckers and swallow the tempting bait without advice of their bankers or approval of their wives. Physicians reading these lines are at the present time paying regular installments for the purchase of stock in enterprises of this sort, who not only will never receive a cent on the investment, but will never again behold the dollars from which they are being so easily separated through their childish confidence in the promoter and his claims. The situation would be a laughable comedy, were it not for the tragedy which will later result with the disappointment attending the realization of the fraud which has been perpetrated. This picture is no idle dream but represents the actual experience of many a physician, if he were to confess the innocent credulity with which he has been duped in the past.

This situation could easily be prevented and readily avoided by any physician who would consult his Better Business Bureau, whenever these tempting morsels are dangled before his vision as bait for his consumption. These bureaus exist in most of the large cities, parts of a national organization, established and maintained by the banks and leading commercial houses, whose sole object for existence is investigation and publicity regarding the claims of all concerns offering stock for sale to the public. This information is available for the seeking, without cost on the part of anyone who desires it. If the data concerning a given enterprise are not on file, they will be diligently sought and obtained on short notice. In view of the existence of these bureaus, there is no excuse for a physician to be thus imposed upon and mulcted of his earnings by investments in fraudulent organizations. The next time an eloquent promoter calls at the office, endeavoring to convince you that purchase of stock in certain enterprises will bring returns to comfort and support you in your old age, at once telephone to the Better Business Bureau for information before investing. If the salesman objects to such procedure or grabs his hat and forthwith decamps, it will be at once evident that the proposed inquiry is a profitable one. If, on the other hand, he sits out that investigation, it will be presumptive evidence that there may be virtue in his proposition. Let us quit being suckers and disprove the prevailing belief that as a class we offer the most tempting and attractive prospect to the financial fakir and imposter.

THE JOY OF MOTORING

Everybody drives a car. Some confine themselves to paved highways in proximity to home. Others investigate all sorts of roads within a certain radius. There is another group of adventurous souls who are dissatisfied unless they personally investigate all the highways of their native land. These are the motorists who traverse the country from the Atlantic to the Pacific, from Canada to Mexico. One is commonly thrilled at the first inspection of the continent from a Pullman observation car. At the best, however, he views but half of the land thus covered, the rest being traversed in sleep. He is presented with a sordid view of various cities, as well as many a drab outlook through cuts and passes necessitated by easy grades.

What a contrast, compared with the view of one who is at liberty to choose his route of travel and select such a course as will enable him to inspect the wonders and beauties which are so abundant in our country. A companion of the writer, who had just returned from Europe, frequently exclaimed that nothing in the famed landscape of England or the Continent was superior to the daily panoramas presented in the course of every day's travel. Consider, as an example, the wonderful settings of mountain and valley in crossing the wide expanse of the Appalachian mountain range. Each fertile valley offers an unsurpassed landscape of green fields, wooded hills and rugged mountains, made attractive by substantial homes with flowering gardens, evidence of the development of years. One is tempted to linger on the summit of a hill for a protracted view of such an entrancing scene, until he learns that it will be duplicated after rounding the next mountain which is before him. And, then, what can match in impressive grandeur the miles of waving grain on the boundless prairies, interspersed with acres of ripened corn, whose swaying tops are not equaled by any other form of vegetation. After observing the numerous areas of these mature crops which one passes day after day, he cannot but be impressed with the fact that a great portion of the wealth of our nation depends upon these forms of agriculture as displayed before his gaze.

Everyone possesses more or less the spirit of adventure. In spite of himself he has a curiosity concerning the unknown. On this transcontinental expedition, every day is a new experience. One wonders what will appear before his gaze when the next hill is surmounted, or by which pass will the highway lead through the approaching mountain. It may traverse a precipitous route, along a road which skirts a deep ravine, or it may combine a rushing mountain stream with all the diversities of rugged peaks or green verdure. There may be long stretches of uninhabited territory, a wonder to the uninitiated that so much barren and useless territory can exist in our land.

One must not overlook the opportunity of selecting for personal visitation the incomparable natural wonders which cannot be surpassed in any other country. Take, for instance, the Yellowstone Park. The natural phenomena herein presented to the visitor cannot be adequately described by words, and can be appreciated only by personal inspection. Here, on the roof of the continent, from the bowels of the earth, gush forth clouds of steam with awe-inspiring vigor. One gazes with wonder and admiration at Old Faithful geyser which, with unfailing accuracy, every sixty minutes belches forth quantities of boiling water, at which one looks aghast with wonder. He cannot but speculate as to how many thousand years this explosion has hourly taken place, and he must ponder as to what forces of nature are continually at work to generate such energy with startling results. No one should consider life complete without a personal visitation to this greatest of nature's wonderful exhibitions.

The unknown presents terrors to many people, which commonly are reduced to a minimum by personal experience. The difficulties of such a journey, its imagined expense and the time consumed often appear insurmountable. In reality these views are greatly exaggerated. For personal comfort a small amount of luggage is needed. If one prefers a camping outfit and cooking of his own meals, a moderate outfit is necessary. This mode of life, however, is time-consuming. The simplest method to be followed involves nights at hotels and meals at dining rooms or restaurants, the cost of which is not excessive. One can easily choose moderate priced accommodations in the cities, and the cost decreases in proportion to the reduced size of the towns through which he passes. These observations are presented to illustrate the degree of comfort and satisfaction which may accompany an extended summer tour. Let one make this transcontinental journey but once, and he will await with eagerness some future season when the experience can be repeated. The proof of this statement will be evident to anyone who will venture on the experiment.

MEDICAL NOTES

JOURNAL WANTED

An Eastern library, which preserves bound volumes of all medical journals, has NORTHWEST MEDICINE complete except that the issue of Vol. I, No. 3, March, 1903, is missing. If any reader has a file of this volume and year, from which this March number can be obtained, he will confer a favor by notifying this journal to that effect. The library in question will thus be able to complete its Journal files.

AMERICAN COLLEGE OF SURGEONS ANNUAL MEETING

The American College of Surgeons will hold the seventeenth Clinical Congress in Detroit, October 3-7. Headquarters will be at the Book-Cadillac and Statler hotels, and the meetings will be held at the Statler Hotel and Orchestra Hall. The Hospital Standardization Conference will extend from Monday morning to Thursday afternoon and will include a discussion of hospital and nursing problems and hospital demonstrations. Monday evening's program will include an address of welcome by the local chairman, the address of the retiring President, the inaugural address of the new President, and the John B. Murphy oration.

Clinics in general surgery will be held in the Detroit hospitals each morning from Tuesday to Friday, and in Eye, Ear, Nose and Throat work the same afternoons. Clinics will also be held at University Hospital, Ann Arbor, Tuesday to Thursday. On Tuesday and Wednesday mornings and afternoons, and on Thursday morning, clinical demonstrations will be held at the Statler Hotel (mornings) and Orchestra Hall (afternoons). On Thursday afternoon the annual meeting of the Governors and Fellows will be followed by a cancer symposium. On Friday afternoon there will be a symposium on traumatic surgery, to be participated in by leaders in industry, labor, indemnity organizations and the medical profession.

On Tuesday evening the program will take the form of a celebration of the Lister Centennial. On Thursday evening there will be a large Community Health Meeting in the Masonic Temple, and on Friday evening the Annual Convocation of the College. Other outstanding features will be the exhibits. In addition to the commercial exhibits there will be a replica of the Lister exhibit at the Wellcome Museum of Natural History, London, including Lister's operating rooms and hospital wards. The Department of Hospital Activities, of Literary Research, and of Clinical Research of the College will also present exhibits.

Among the foreign guests will be Sir John Bland Sutton, England; J. M.. Munro Kerr, Scotland; Gordon Craig, Australia; Gustaf E. Essen-Moller, Sweden; S. A. Gammeltoft, Denmark. The retiring President is W. W. Chipman, Montreal, and the President to be inaugurated George David Stewart, New York. The Lister oration will be delivered by W. W. Keen, Philadelphia. The Chairman of the Detroit Committee on Arrangements is Alexander W. Blain.

SERVICE FOR PHYSICIANS. This journal and the Cooperative Medical Advertising Bureau of Chicago maintain a Service Department to answer inquiries from you about pharmaceuticals, surgical instruments and other manufactured products, such as soaps, clothing, automobiles, etc., which you may need in your home, office, sanitarium or hospital. We invite and urge you to use this service which is absolutely free to you.

The Cooperative Bureau is equipped with catalogues and price lists of manufacturers, and can supply you information by return mail. Perhaps you want a certain kind of instrument which is not advertised in the journal, and do not know where to secure it; or do not know where to obtain some automobile supplies you need. This Service Bureau will give you the information.

Whenever possible, the goods will be advertised in our pages, but if they are not, we urge you to ask the journal about them, or write direct to the Cooperative Medical Advertising Bureau, 535 N. Dearborn St., Chicago, Illinois. We want the journal to serve you.

THE INTERSTATE POSTGRADUATE MEDICAL ASSOCIATION of North America will hold its annual meeting at Kansas City, Mo., October 17-22. An elaborate scientific program has been prepared, with papers from leading members of the profession in the United States, and a large representation from the profession of Europe and Great Britain. For two days before this meeting, preassembly clinics will be held in Kansas City hospitals.

A GREATER JEFFERSON MEDICAL COLLEGE. Following the example of many other leading medical colleges of this country, Jefferson Medical College of Philadelphia has in anticipation the construction of a new college building twelve stories in height, to be erected on a quarter of the block of land covered by the hospital and other buildings of this institution. This medical college has had an interesting history during its existence of one hundred and two years. Its graduates have been numbered among many of the most distinguished members of the profession in this country. Its alumni will be rejoiced at this indication of expansion and continued development of professional influence and scientific growth.

OREGON

STATUS OF GOITER IN OREGON. The report of the goiter survey of Oregon, which was conducted several months ago by Dr. Robert Olesen of the United States Public Health Service, has been made public by the state department of health. The incidence of goiter in this state has heretofore been reputed to be high, about fifty per cent of the population being affected. Dr. Olesen's survey disclosed a lower figure, this being 22.3 per cent goiter among 8000 school boys examined and 38.3 per cent among 9000 girls. He did not find as low an incidence as he had expected in the regions adjoining the sea coast.

Need of Tuberculosis Hospital Shown. Although a vote by citizens of Oregon has authorized the construction of the Eastern Oregon Tuberculosis Hospital at The Dalles, the work of construction has not been started, owing to lack of general funds. At present the waiting list of tuberculous patients seeking admission to the present institution at Salem is nearly twice as great as it was a year ago. On account of this alarming lack of facilities, the Oregon Tuberculosis Association has laid before the Oregon State Board of Control the urgent need of constructing the new hospital in the immediate future.

Plans for New Hospital. The Bureau of Construction at Washington, D. C., has prepared drawings and specifications for a new veterans' hospital at Portland, which will cost over $1,000,000, with provision for 300 beds. The present leased hospital is much over-crowded and patients have been sent to hospitals in other cities. The new hospital will be located in Sam Jackson Memorial park on Marquam hill, where a site has been donated for the buildings.

New Hospital Opened. The new Columbia hospital at Astoria was opened for patients August 1. The building is fireproof and modern throughout. It will increase greatly the present hospital facilities of that city.

Hospital to be Enlarged. Klamath General hospital will soon be enlarged by the construction of an addition. Lots adjoining the hospital have been purchased for that purpose.

Hospital Staff to be Organized. Columbia hospital, at Astoria, will have a staff selected, as was determined at a meeting of twenty-nine interested physicians on August 15. It is proposed also to establish a training school for nurses.

Vienna Specialist Lectures. Dr. Hans Brunner, assistant professor of otology at the University of Vienna, gave a series of ten lectures at Portland in August on the subject of neuro-otology. The course was well attended by otolaryngologists of Portland and other Oregon cities.

Lane County Medical Society held a meeting at Eugene, August 15. About twenty-five physicians were in attendance. Dr. J. W. Sherrill, director of the Scripps Memorial Metabolic Institute of La Jolla, Calif., addressed the meeting on the subject of diabetes and its treatment by insulin.

Officer Resigns. Dr. Jesse Edgington, of Hood River, has resigned as city health officer after having served in that capacity since 1909. At the same time he has served as county health officer since 1915.

Dr. Davis Grisso, of Portland, has taken over the practice of Dr. R. G. McCall at Huntington. Dr. McCall has gone to New York for a short course of postgraduate study. Later he will become connected with the medical department of the Union Pacific Railway with headquarters at Los Angeles.

Lost in Forest. Dr. L. D. Gass, of Klamath Falls, became lost on the west slope of the Cascade mountain range during a vacation trip. Later, wandering about for two days, he finally reached the Lake o' the Woods road, where he was picked up by a passing motorist. He suffered no ill effects from his adventure.

To Study Abroad. Dr. William P. Sharkey, a 1926 graduate of the University of Oregon Medical School, sailed July 30 for Dublin, Ireland, where he will pursue special studies in obstetrics and gynecology. Later he plans to visit clinics in Glasgow and Vienna.

Dr. C. S. Edwards, who has practiced for twenty-four years at Prineville, has located for future practice at Redmond.

Dr. M. C. Findley, of Salem, recently returned from a tour of Europe, during which he visited clinics in Vienna.

WASHINGTON

Complete Survey of Seattle's Hospital Needs. During the past year a committee of physicians and laymen was appointed by former Mayor Edwin J. Brown of Seattle and the King County Medical Society for the purpose of making an intense study of the present and future hospital requirements of the city and county. A hospital survey was made by Dr. R. G. Broderick, San Francisco, president of the American Hospital Association and director of hospitals at Stanford University. He was formerly director of the hospitals of Alameda county, which he organized along modern lines. His report has recently been unanimously adopted by the special committee and its main features made public. After calling attention to the totally inadequate and antiquated present public institutions, he offers several recommendations for a county-city organization of hospital and health service. The building program includes the construction of a two hundred seventy-five bed hospital at the south end of the University of Washington campus. A hospital so located, he points out, will serve the needs of the school of nursing at the university. Eventually it will provide clinical facilities for a medical school, when such is established. He also recommends the location of an emergency hospital in a downtown location, and a building for chronic cases at the present county hospital. Plans for the enlargement of Firland hospital for tuberculous patients and for a convalescent farm at this site are likewise included. Dr. Broderick believes that branch dispensaries should be located in poor and populous districts of Seattle.

Visit Hospital Ship. During Fleet week at Seattle, physicians and others were invited to visit the United States ship Relief, the floating hospital of the Pacific naval fleet. It has a total emergency capacity of five hundred twenty-nine patients. The naval medical officer in charge is Commander C. B. Munger. Physicians attached to the vessel were guests of members of the King County Medical Society during the time of the fleet's sojourn in Seattle.

Entertain Visiting Psychiatrists. A dinner at the Tacoma Country Club was given by the Pierce County Medical Society August 17 in honor of the psychiatrists attending the annual Prison Congress at Tacoma.

Low Infant Death Rate. The American Child Health Association has recently announced that Seattle continues to occupy a place among America's cities with low infant mortality rates. The Seattle rate is forty-seven per thousand. Portland, Ore., has a still lower rate of thirty-nine.

Arrest Illegal Practitioner. "Dr." Alex Karsunky of Puyallup was arrested August 1 by inspectors of the state department of licenses for practicing medicine without a license.

Naval Officer Transferred. Commander C. W. Carr, of the hospital ship U.S.S. Relief, has been transferred to shore duty at the Bremerton naval base hospital, where he will be attached to the eye, ear, nose and throat department.

Becomes Medical Advisor. Dr. Harold Nichols of Seattle has been appointed chief assistant medical advisor of the department of labor and industries with headquarters at Olympia. He will also assume charge of the x-ray work in the department.

Child Hygiene Worker Resigns. Miss Ella Erickson, who for the past four years has occupied the position of Advising Nurse of the Child Hygiene division of the Washington State Department of Health, has resigned. With the cooperation of local physicians, she has conducted many child health conferences in villages and rural districts of the state. She is succeeded by Mrs. Mary L. Allen, R.N., of Seattle.

Hospital Site to be Inspected. Mr. A. E. Middleton, chief architect for the Indian service, will this month inspect locations for the Indian tuberculosis hospital to be established at Toppenish. When this has been decided, work will start at once on the hospital.

Dr. Will Otto Bell, of Seattle, last month returned home after several months studying in Europe. Most of this time was spent in Vienna. He reports general conditions in Europe much better than at the time of his previous visit three years ago.

Dr. H. H. Slater, of Deer Park, sails this month for France, where he and Mrs. Slater will respectively serve as delegates to the American Legion and Auxiliary conventions to be held at Paris. After touring Europe and the British Isles they will return home about two months later.

Dr. E. P. Fick, of Seattle, sailed for Europe last month to be absent during the year. He will visit Spain, Italy and Palestine.

Dr. C. H. Hofrichter, of Seattle, has returned home after four months visit to Europe, where he spent most of his time in study at Vienna.

Dr. J. C. Moore, of Seattle, last month sailed for Europe to be gone for several months study.

Medical Weddings. Dr. Frank Rose and Mrs. Grace McKensie of Spokane were married August 4. Dr. F. H. Collins and Mrs. Laura Cain of Goldendale were married at Maryhill July 26.

IDAHO

Health Officer Appointed. Dr. F. M. Leitch, of Moscow, was last month appointed city health officer to fill out the unexpired term of the late Dr. J. N. Clarke, who had served as city and county health officer most of the time for the past twenty years.

Dr. F. M. Ray, of Pocatello, Ida., recently returned to his practice after a year spent in postgraduate study in Vienna.

OBITUARIES

Dr. James Francis Bell, Portland, Ore., died at his home August 14, aged 67 years. He was born at Toronto in 1860, and graduated from the University of Toronto Medical School in 1882. He located at Portland in 1889 and practiced continuously there until his death. He was one of the pioneer physicians of Portland, and for many years was a professor in the University of Oregon Medical School.

Dr. Charles A. Beach, of Puyallup, Wn., died August 23, after a long illness, aged 69. He was born at Mansfield, Penn., in 1857. After graduating from the State normal school, he served as county superintendent and principal of a school at Mansfield for six years, after which he studied medicine at Cleveland, Ohio. After practicing at Mansfield for six years he moved to Sayre, Penn. In 1898 he went to Alaska as physician to a mining party. In 1900 he located in Washington, purchasing land which became the townsite of Roy. He lived there for nineteen years, moving to Puyallup in 1917.

Dr. James N. Clarke. of Moscow, died from pneumonia, August 19, aged 70 years. He was born in De Kalb county, Missouri, in 1857. He moved to Garfield, Wash., in 1892, where he remained for ten years, locating at Moscow in 1902. He served for two years as mayor of that city, and for many years acted as both city and county physician, holding the latter position at the time of his death.

Dr. George Volney Ketchum, Portland, Ore., died at his home July 27, aged 70 years. He was born at Huntertown, Ind., in 1857, and graduated from Western Reserve University Medical School in 1880. He had practiced in Portland since 1902.

Dr. James Claywell Snyder, Seattle, Wash., died at his home August 21, aged 53 years. He was a native of Tennessee. He received his early education in Seattle, and graduated from the Cooper Medical College, San Francisco, Calif., in 1903. H had been engaged in practice in Seattle for the past thirty-seven years.

MEDICAL RESERVE CORPS

Special Orders. No. 146—Headquarters Ninth Corps Area, Presidio of San Francisco, Calif., August 10, 1927.

By direction of the President, and under authority contained in letter from The Adjutant General, dated October 7, 1926, subject: "War Department Training Directive, Calendar Year 1927," each of the following-named officers, Medical Corps Reserve, are ordered to active duty effective September 11, 1927. On that date each reserve officer named herein will proceed without delay to the Presidio of San Francisco, California, and upon arrival thereat will report in person to the commanding officer thereof for training. Each officer will rank from the date specified after his name:

Colonel Samuel Ernest Lambert, O-199604, Med.-Res. 401 Old National Bank Building, Spokane Washington. August 11, 1927.

Colonel Archie Clifford Van Cleve, O-139565, Med.-Res. 595 East 17th Street North, Portland, Oregon. July 1, 1927.

Lieut. Colonel Charles Edwin Butts, O-231667, Med.-Res. 411 Old National Bank Building, Spokane, Washington. September 11, 1927.

Lieut. Colonel Horace Montague Francis, O-142728, Med.-Res. Corvallis, Oregon. August 11, 1927.

Lieut. Colonel Frank Pierce Gardner, O-152688, Med.-Res. 504 Boren Avenue, Seattle, Washington. August 11, 1927.

Lieut. Colonel Frederick Thomas Harris, O-117502, Med.-Res. Gowman Hotel, Seattle, Washington. February 28, 1927.

Major John Maurice Henderson, O-102899, Med.-Res. 4843 California Avenue, Seattle, Washington. August 26, 1927.

Major Earl Francis Ristine, O-221687, Med.-Res. 5th Floor, American Bank Building, Seattle, Washington. August 26, 1927.

Major Benjamin Newton Wade, O-210870, Med.-Res. 92 Peacock Lane, Portland, Oregon. September 11, 1927.

The following Medical Reserve officers have been ordered to active duty at the Presidio of San Francisco, Calif., for the period September 11-24, for a special course of instruction pertaining to the administrative management of large army hospitals.

Col. Archie C. Van Cleve, Portland.
Col. Samuel E. Lambert, Spokane, Washington.
Lt. Col. Frank P. Gardner, Seattle, Washington.
Lt. Col. Frederick T. Harris, Seattle, Washington.
Lt. Col. Horace M. Francis, Corvallis, Oregon.
Lt. Col. Charles E. Butts, Spokane, Washington.
Maj. John M. Henderson, Seattle, Washington.
Maj. Benjamin N. Wade, Portland, Oregon.
Maj. F. Ristine, Portland, Oregon.
Maj. Edwin J. Barnett, Spokane, Washington.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

TRANSACTIONS OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA. Third Series. Volume Forty-eight. Cloth. 405 pp. Printed for the College. 1926.

In this volume there is a symposium on focal infections. Kolmer from the laboratory standpoint expresses doubt as to the specific elective affinity of organisms for certain tissues after escaping from sites of focal infection. He feels the same in regard to any specific neurotropic or dermotropic affinity of certain strains of spirocheta pallida in the localization of syphilis secondary to the primary chancre. He is more impressed by the fact that secondary infection occurs, owing to heredity influences, or inherent lack of resistance in particular organs, or to trauma in the broad sense of the word, or to general virulence of the organisms. In this respect he differs wholly from Rosenow who appears to have satisfactorily demonstrated the inherent specific affinity that streptococci have for certain organs in animal experiments.

Kolmer believes that disease secondary to focal infection is more often due to direct infection than to the influence of bacterial toxins but thinks toxins are instrumental in causing neuroses and psychycoses. He quotes McCarthy in his belief that symptoms of these disorders more often occur in persons with hypotension, probably due to endocrine unbalance. Moreover, Kolmer conceives that soluble proteins of bacteria absorbed from primary foci may be responsible for allergic sensitization, as seen in bronchial asthma, nervous rhinitis and skin diseases, as in exfoliative dermatitis following the administration of arsphenamin. He points out that the individuals showing the largest shadows about the apices of infected teeth are not by any means those most likely to exhibit secondary infections but that these rather indicate a high immunologic defense. And it is well known that the pulples tooth, without roentgenologic findings, is more frequently the cause of secondary infection than are the large periapical cavitations seen in x-ray films.

What is needed is some exact method of determining the presence of secondary infection, where a primary focus exists. At present Kolmer believes there is some hope of developing a successful complement fixation test in the diagnosis of focal infection. He affirms that autogenous vaccines are of great value even after complete removal of the primary focus because often the secondary foci of infection are so well established that they will otherwise continue.

Dr. O. H. Perry Pepper gives us the internist's viewpoint of focal infection. It seems hardly fair to compare the mistaken clinical enthusiasms that seized the profession fifty years ago over ovariotomy and some twenty-five years since concerning nephropexy, that amounted to crazes or fads, with the present interest in focal infection—but so he begins his discussion. To the reviewer it would appear that there animals, would seem to constitute a sufficient scientific basis for our conception and practice concerning focal infections. However, after this preliminary display of skepticism, in which he asks, "are we merely in the midst of a movement which will run its course and be looked upon in ten years as we look back on the days of nephopexy?" Pepper continues by reflecting the more moderate views on the subject held by most clinicians today.

There is a most admirable summary by Martin of Philadelphia of all the recent researches on liver physiology and pathology under the caption hepatitis and its relation to cholecystitis, in which he does not find any close relations of the two, or so close a relation as might be surmised.

WINSLOW.

THE NEW MEDICAL FOLLIES. An Encyclopedia of Cultism and Quackery in the United States. By Morris Fishbein, M. D., Editor of the Journal of the American Medical Association and Hygeia. 235 pp. $2.00. Boni and Liveright, New York. 1927.

The author's persistent pursuit of the medical quack and fakir is well known to every reader of medical literature. The number of cults and quackeries as herein described is astounding, even to one somewhat observant of their rise and fall. They are arranged alphabetically, each letter having a larger or smaller quota. Each receives a brief sketch, outlining the preposterous claims and impositions of each. There is an essay on the cult of beauty, examining at some length the bizarre absurdities which its perpetrators foist on the credulous seekers of artificial personal beauty. The innate desire for personal adornment and perpetual individual attractions are the basis of many fake practices which the author elaborates in the chapter "The Craze for Reduction," while "Rejuvenation" and "The Mechanical and Glandular Methods" explain how the hope of sexual gratification makes men easy victims for the seekers after their dollars. What a fertile field for the ingenious impostor in the realm of human credulity. There is an interesting review of eclecticism and the attempts to establish it as a system of medicine. Its fallacies and grotesque scientific impossibilities are clearly portrayed. The author turns his critical examination on phychoanalysis, as a possible cult movement. The extravagant claims and deductions of Freud are clearly analyzed and the possible danger is outlined of accepting and applying the principles as enunciated. The conclusion is that psychoanalysis cannot today be used as an established science. This is a fascinating volume, replete with information that every physician ought to possess.

LECTURES ON INTERNAL MEDICINE. (Delivered in the United States in 1926.) By Knud Faber, M.D., Professor of Internal Medicine, University of Copenhagen, Denmark. With 43 Figures and Charts. Cloth, 147 pp. $3.00. Paul B. Hoeber, Inc., New York, 1927.

Professor Faber was invited to lecture in this country by the American and Philadelphia College of Physicians, by Harvard and Johns Hopkins Medical Schools and the Rockefeller Institute, and the four lectures are contained in this little volume. He has been particularly devoted to microscopy of the stomach. Our knowledge of this organ has been deficient until recently because the mucous membrane of this organ underwent such rapid decomposition postmortem owing to the action of the gastric juice. In 1901 Faber prevented this by injection of 10 per cent formalin into the abdomen immediately after death.

The term achylia gastrica was introduced by Einhorn in 1892 to describe a functional disorder of the stomach, due to nervous disturbances and not to chronic gastritis and atrophy. Later Martius agreed that it was a nervous functional disorder but due to hereditary weakness of the stomach and therefore often congenital and familial. Faber has proved that achylia is either due to irritation of the stomach from within, as by alcohol, or to hematogenous intoxication, as from the toxins of infections, seen commonly in typhoid fever, tuberculosis, dysentery and intestinal infections, and is always due to gastritis. But the gastritis is not simply a catarrhal inflammation of the gastric mucous membrane but an involvement of the whole parenchyma of the stomach wall.

Gastritis is exactly analgous to hepatitis or nephritis in its etiology and functional response. In milder forms of gastritis the gastric secretion may be wholly recovered, but when the damage to the glands or secreting structure is severe there is adany produced, i.e., absence of all glands and secretion. Chronic cases of achylia may represent damage done years before in infancy. Marriott and others have shown that achylia is very common in children with gastrointestinal infections and that normal secretion may not return for a great while or never. Nervous achylia is but temporary, as shown by section of the vagi, and there is no such condition as inherited or familial achylia. So that Faber states the proper term for achylia should be gastritis, meaning an inflammatory disease of the glandular gastric parenchyma, and that gastritis takes its natural place alongside of nephritis and hepatitis. The many charts showing the pathology in achylia and the logical deductions therefrom afford incontrovertible proof of Faber's conclusions, and his writing is in beautifully simple English which should shame many of us aborigines.

In his next lecture Faber shows how pernicious anemia is caused by chronic achylia, due to excessive bacterial growth in the small bowel with absorption of toxins. Sometimes it occurs for the same reason, owing to carcinoma of the stomach, and in stricture of the small intestine from tuberculosis. A remission from pernicious anemia sometimes follows from injection of foreign proteins. Some cases happen without achylia, but with general infection. Faber reports five such instances. The third lecture he devotes to benign glycosuria which is not at all rare. The diagnosis is made by finding several normal blood sugars with the patient on an ordinary diet and the result is due to a low renal threshold. His final lecture is on the historical outline of medical therapy. The book is well worth reading as illustrating the combination of clinical and laboratory medicine by a man who has to a high degree a clear, logical, analytic mind and who is one of the most highly cultivated and experienced investigators and clinicians to today. Winslow.

American Illustrated Medical Dictionary. The terms used in Medicine, Surgery, Biology, Dentistry, Pharmacy, Chemistry, Nursing, Veterinary Medicine and Kindred branches. Edited by W. A. Newman Dorland, M. D., Member Committee on Nomenclature and Classification of Diseases of American Medical Association. Fourteenth Edition, Revised and Enlarged. Octavo of 1388 pages, 319 illustrations, 107 in colors. Philadelphia and London: W. B. Saunders Company, 1927. Flexible Binding, Plain, $7.00 net; Thumb Index, $7.50 net.

No physician can efficiently practice these days without a medical dictionary which is constantly available. This dictionary of Dorland's, appearing is altogether too evident a scientific basis for modern treatment, founded on eradication of focal infection to justify such a comparison as that of Pepper. The reproduction in animals, following intravenous injection of bacteria obtained from human diseased organs, of the same lesions in the same organs in two years after the previous edition, includes more than two thousand new words, indicating the astonishing addition to medical nomenclature which is constantly arising. This volume is not an encyclopedia, but a concise and convenient word-book, presenting definitions and collateral information needed by every medical man. In addition to the usual dictionary matter, there is added an anatomic and clinical table, besides various tests and staining methods. A posologic and therapeutic table is presented, including actions and uses of all drugs. This dictionary is up-to-date, and useful for the physician's daily needs.

The Medical Clinics of North America. (Issued serially, one number every other month). Volume II, Number 1, (Chicago Number, July 1927). Octavo of 294 pages with 26 illustrations. Per clinic year (July 1927 to May 1928). Paper, $12.00; Cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company.

Many interesting and instructive clinical reviews are published in this volume. Pollock describes several cases of aneurysm of the cerebral vessels, a very rare and unusual condition. He mentions the baffling array of symptoms which make the cases so puzzling. Commonly, diagnosis is not established until the postmortem. The cases described were all fatal. It is well known that many cases of asthma are due to sensitization to house dust. Feinberg reviews this condition, describing the necessary tests to establish the diagnosis and the administration of an extract from the infecting dust, which is commonly successful in giving relief. He cites a number of cases, giving details of solutions and treatment. Hutton considers endocrine disorders as related to more common syndromes. Three common misapprehensions are commonly entertained, that endocrine diseases are strange and rare, that they are marked by striking and unusual peculiarities, and that after a diagnosis is made nothing can be accomplished by endocrine therapy. He calls attention to the fact that diabetes and goiter disturbances are indications of some endocrine upset. Many of these are relieved by judicious treatment. Cases are detailed to prove these statements. Elliott, Nadler and Starr report a dozen cases of pernicious anemia who presented evidence of permanent blood regeneration after liver feedings. They conclude that the application of this treatment has added to the therapeutic armamentarium of this disease an agent that gives results not approached by any other measures.

The Surgical Clinics of North America. (Issued serially, one number every other month.) Volume 7, number 3. (Chicago Number—June, 1927.) 330 pages with 81 Illustrations. Per Clinic Year (February, 1927, to December, 1927). Paper, $12.00; Cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company.

This volume presents a large number of interesting surgical conditions, as is true in all these Clinics. Straus discusses carpal injuries, illustrated by the consideration of three patients, on whom he operated to correct disabilities following injury to some of the carpal bones. Emphasis is laid on the information contained from radiograms, without which a diagnosis is impossible. He demonstrates that the removal of the injured bone is often the only solution of the difficulty. Koch describes the treatment for contractures by the aid of full thickness of skin grafts and pedunclated flaps. Illustrations indicate the striking results obtainable by the judicious use of these measures. Eisendrath discusses postoperative complications in urology. He lists the conditions which are unavoidable, and common more or less to all surgical procedure. Others are avoidable, or can be greatly minimized in severity by proper postoperative care and treatment. He emphasizes the importance of the adequate instruction to resident medical and nursing staffs to avoid such disasters. Cases are cited as instructive examples of the principles enunciated.

The Medical Clinics of North America. (Issued serially, one number every other month.) Volume 10, Number 6, (Heart Number, May, 1927.) Octavo of 211 pages with 101 illustrations and complete Index to Volume 10. Per Clinic year, July, 1926, to May, 1927. Paper, $12.00; Cloth, $16.00, net. Philadelphia and London: W. B. Saunders Company.

This number is devoted almost entirely to the subject of diseases of the heart. Stroud, in a chapter on the clinical value of the electrocardiograph, states that he has written primarily to allay the fear of the average physician that articles including electrocardiograms must be too scientific to be of practical value. He freely admits that cardiologists have been over enthusiastic about the value of the electrocardiograph in the diagnosis of cardiac conditions. He then attempts to show how this instrument may be of value in diagnosis when combined with the time-

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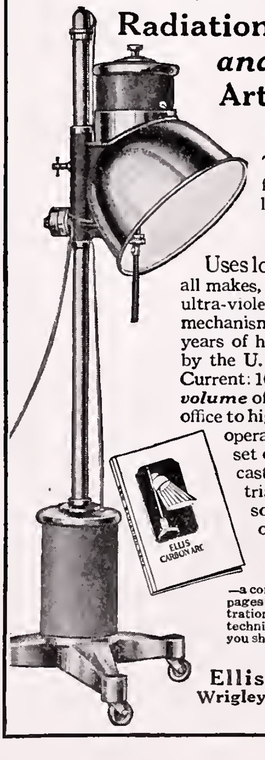

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honored methods of accurate history taking and careful physical examination.

Hughes, in discussing the subject of pericarditis, states that he sees no danger in aspirating a pericardial effusion when indicated, e. g., when the patient is showing increased cyanosis. There is a chapter by Pendergrass on the use of the x-ray in cardiology, with numerous excellent x-ray illustrations.

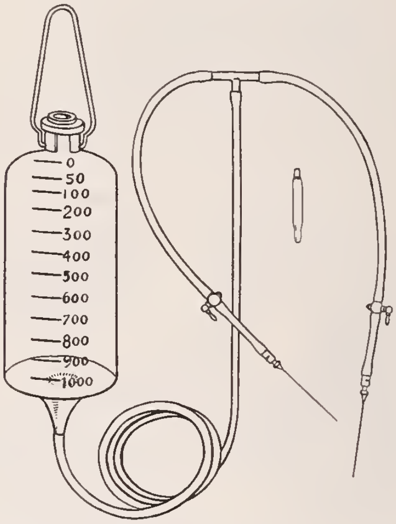
Approaching Motherhood. Questions and Answers of Maternity. By George L. Brodhead, M. D., Visiting Obstetrician, Bellevue and Allied Hospitals, Harlem Division, New York City. Third Ed., 193 pp., $1.50. Paul B. Hoeber, Inc., New York, 1927.

In the third edition of this small volume, the author states that only a few minor corrections have been made. The previous editions have been of value as a guide to the pregnant woman in answering the many questions which arise during this period. The author has always followed the policy of discouraging self-treatment and recommends consultation with the physician when any condition of consequence arises.

HYPODERMOCYLSIS

The importance of hypodermoclysis treatment, and its field of usefulness in medical, and particularly surgical work can scarcely be overestimated. It may often be a lifesaving procedure. This applies especially in urologic surgery. Owing to frequent difficulty of administration with the usual equipment now in use for this treatment, Dr. Augustus Harris of Brooklyn, N. Y., has been stimulated to devise a new set.

Failure of the usual equipment to function properly has been due to the following causes:



1. Kinking of the tubing with partial or complete stoppage of the flow. This has been due to two causes: (a) Lack of uniform and proper quality of rubber tubing which is easily spoiled with repeated sterilization; (b) use of hemostats, clips, thumbscrews, and other cut-off devices, to occlude outflow from tubing. This practice quickly ruins the tubing where applied.

2. Leaking of fluid, and sometimes air, at one or more of the connections between tubing and fittings. Some have attempted to overcome this by windings of thread or suture material at these points.

3. Inadequate means of connecting terminal ends of tubing with needles. Frequently the needles are already attached, and even tied to the tubing. This is not only unhandy, but does not allow convenient and frequent change of needles, and their proper cleansing and sharpening.

4. Insufficient capacity of the jar-container for subcutaneous use. The usual jar holds only 700 c.c. and requires refilling in most instances.

The apparatus consists of a graduated Kelly infusion jar, with pointed end, 1,000 c.c., the proper lengths of rubber tubing to make connection, two stopcocks, two Luer Lok adapters, two Yale needles 19 gauge 2½ inch, one glass T tube and one glass observation tube. The rubber tubing is made of good quality gum rubber to withstand repeated boiling, and is of standard, uniform quality, thickness and calibre, with a diameter of ¼ inch and lumen of ⅛ inch. A reserve supply of this tubing should be kept on hand to replace worn-out tubing. A short section of heavy rubber tubing is supplied for connection with ⅜ inch neck of gravity jar. The stopcocks should be attached as near the terminal ends of tubing as possible.

If the outfit is to be employed for intravenous work, remove the T tube and replace with glass observation tube, using one terminal rubber connection with fittings. If Fordyce needle is used disconnect terminal Luer Lok adapter, and replace with Luer-slip made for Fordyce needle.

It is particularly recommended that all new rubber tubing, before being used for the first time, be soaked for six hours in normal sodium hydroxide solution, and then rinsed. As proven by Stokes & Busman in experiments on dogs, arsphenamine solutions, as well as alkaline solutions, and transfusion media may become very toxic when new rubber tubing is used. This toxic agent is not destroyed by sterilization of the tubing, but disappears in repeated use of same. The toxic agent is removed promptly by soaking in hydrate solution as stated.

The simple, attractive features provided in this set make it indispensable to surgeon, internist and practitioner, and eliminate frequent annoyance of poorly functioning apparatus.

The outfit is manufactured by Becton, Dickinson & Co., Rutherford, N. Y.

NORTHWEST MEDICINE

The Journal of the State Medical Associations of Oregon, Washington, Idaho and Pacific Northwest Medical Association

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ADDRESSES

DEVELOPMENTS OF MEDICAL PRACTICE *

W. B. Morse, M.D.
SALEM, ORE.

The evolution of the practice of medicine has brought about a great change in the work of the physician, both as to type of work and multiplicity of detail entirely new to those of an older generation. Methods and instruments of precision and complicated laboratories have largely replaced the earlier procedures for arriving at a diagnosis. Methods of treatment also have been so changed that the doctor of thirty-five years ago would scarcely recognize them.

The attitude of the physician toward the public has undergone a complete revolution. The old time air of mystery and superiority has been supplanted by a general plan of telling the patient and the lay public as nearly as possible everything they want to know. Much of the work that the doctors were doing thirty-five years ago has been wiped off the map and the modern physician is now busying himself with activities along entirely different lines.

PREVENTIVE MEDICINE

It has been found that preventive medicine in its various aspects will equally tax the skill and demand the time of the doctor and be far more beneficial to the public. Public health work as done by the boards of health, county health units and clinics of different sorts, which would seem at first thought to be robbing the profession of a large part of its legitimate activities, as a matter of fact, has not interfered at all and has been of vast economic value.

The practice of periodic health examinations which has come into vogue at the present time calls for a degree of skill on the part of the doctor quite equal to that required for the treatment of any illness. It will supply him with a considerable amount of work and at the same time save loss of time, a great amount of suffering and untimely deaths for those of the lay public who take advantage of it.

LEGISLATIVE WORK

The time has come when the medical profession, whether it wishes to or not, must busy itself with legislative activities. The public never asks for protection along health lines. Protective health measures nearly always have, at first, to be literally crammed down their throats, either by intensive teaching or by legislation. When the thing is understood and demonstrated, then they are for it. This work of getting such measures before the public necessarily belongs to the medical profession and it cannot escape the responsibility. There is no limit to the elevation of our own standards and this, too, is often necessarily brought about by legislation.

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* President's Address. Read before the Fifty-third Annual Meeting of Oregon State Medical Society, Salem, Ore., Sept. 1-3, 1927.

SYSTEMS OF PRACTICE

In these later days it is also necessary to control those who wish to practice the healing art by methods peculiar to their own beliefs. They must not be allowed to run riot to the mental and physical disadvantage of the public upon whom they practice. All of these systems of practicing the healing art, developed upon the foundation of a peculiar belief, came as a part of the evolution of medicine in its broad sense. They are like the suckers which grow at the base of a cherry tree. Within my personal recollection there have been homeopathy, eclectic, osteopathy, chiropractic, naturopathy, and christian science. Each one of these systems is built upon a foundation too narrow to support a structure of sufficient magnitude to cover the whole field of medical practice. These things, as they come up, cannot be smothered nor laughed out of existence.

CURE BY EDUCATION

By far the best and practically the only way to overcome such systems is by education. When the time came that men who contemplated practicing as homeopaths were really trained and educated before entering upon their life's work, the system, as such, began to lose ground until now there is practically nothing of the sort in existence. Osteopathy, with its present day schools demanding a quite thorough course of instruction, is rapidly going the same road. I doubt if any but the older men in my audience have any conception of what was once talked of as eclectic medicine. The newer ones, chiropractic and naturopathy, will also disappear when the time comes that their educational requirements are sufficiently high. Any school of practice which turns out practitioners not well grounded in the basic sciences pertinent to the body in health and illness should be fought; not by ridiculing it, not by trying to legislate it out of existence, but by forcing it to educate its devotees.

ELEVATE ALL STANDARDS. BASIC SCIENCE

While striving to elevate the standards of all these so-called systems of practice, the medical profession should not forget its own household, taking every opportunity to keep itself in such condition that it will fully maintain its own self-respect and command the respect of the layman. I shall be glad if conditions are such during my lifetime that everyone who wishes to engage in the practice of the healing art shall, first of all, be obliged to pass an examination along basic scientific lines without reference to therapeutic methods. A proper basic science act, placing this examination in the hands of the State University, would to my mind best secure a proper elevation of the standards of all.

All of these new conditions and duties and responsibilities have come upon us as a part of the evolution of medicine. They are here to be met and must be met whether we do it gracefully or not. Conditions are such now that we cannot properly seclude ourselves on the plea that we will not engage in anything but scientific work. We can no more conduct ourselves as we did fifty years ago than can the lawyer, the minister, the banker or the merchant. How much better to accept conditions as they are today and meet them squarely and promptly than to try to escape or put off the inevitable.

PAST YEAR'S WORK

During the past year the secretary and myself, sometimes accompanied by others of the profession, have visited nearly all the societies in the state. We have stressed what we thought the most important things for the growth and usefulness of the State Society.

Much has been said on these visits regarding harmony and cooperation among the members. Little can be accomplished by any organization where these two factors are neglected. There must be unanimity of purpose. Nothing which arises in the activities of our society should ever be allowed to result in lack of harmony. One of the greatest causes of failure in both harmony and cooperation is the improper behavior on the part of minorities.

Whenever a group finds itself in the minority—and there must be a minority on every question decided by vote—they will not help themselves or the society by raising a row about it. The only proper course is to accept their defeat gracefully and help as much as possible to carry out the wishes of the majority. Majorities are not always right, but among groups of intelligent men they are quite apt to be. The man who is in the minority on one question will likely find himself in the majority on the next one. In the end things will come out right, if all will give their entire attention to doing their duty and not waste time criticising the other fellow.

The most useless thing a man or group of men can do is to remain outside the society because in their opinion it is not properly conducted. By pursuing that course, whatever influence they might have towards bringing about what they want is entirely lost. The only possible way in which they can accomplish the changes they desire is to get in the game and help put them over.

PERIODIC HEALTH EXAMINATION. LEGISLATION. PUBLICITY

The advisability of periodic health examinations has been talked of over the state and a manual of our own and blanks of our own carefully worked out. In the matter of legislation, the society has accomplished much. Our recent medical practice act, while not all that could be desired, is a great improvement over what we had before, and was only put through by the society acting as a very well unified group. While doing that, we have also elevated the standards of some other systems of practice, which to my mind is a very important factor in working out changes which will result in benefit to the public. We have advanced somewhat in our plan of publicity, aiming to secure a broader understanding on the part of the public regarding what we are trying to accomplish—and how and why.

MEMBERSHIP

There has been considerable effort to increase our membership with fair results. This, however, cannot all be done by the officers alone, but will be much better accomplished when the members at large take an interest as individuals. Dr. Matthis, in my home town, has been responsible for adding six names to our membership roll during the last month or two. A few more like him, working over the state, would very soon give our membership list an impetus which nothing could stop until every desirable man in the state was on the roll.

FUNDS

For the first time in the history of the society we have an ample supply of money for all our present activities. The officers and councilmen have spent considerable time trying to work out lines of service on the part of the society which will make it of greater value to its members. I predict that by another year many men who now wonder what the society is for and what it is doing will not find it necessary to ask such questions.

EXECUTIVE SECRETARY

The work of the past year, I am sure, has amply demonstrated to all those who have had an active part in it, the necessity for an executive secretary. There is certainly plenty of work for an active man to do putting in his full time. I think the records will show that there is no money better spent for the society than for his salary.

COMING YEAR

I do not know what may come up during the coming year in the way of new work, but there are a few things which I think the incoming officers, councilmen and committeemen should keep in mind. First of all are the prime requisites of membership and money. To bring up our membership to the highest possible degree will not only have a far reaching influence on the professional spirit of the state but will make the society of much more value to its members. The funds of the society should be carefully safeguarded, but no limit should be placed as to expenditures which will really bring results. I hope nothing will be done to cripple the finances of the society so we will have to go back to the old plan of borrowing money every year to finance the state meeting. Let us make and keep our society worth while and in no sense cheapen it.

PUBLICITY LEGISLATION

I think we should learn from the publicity work of the Gorgas Memorial, and as a society do much more along that line than has been done in the past. I hope to see the work that has been started for periodic health examinations continued and increased. We learned some very valuable lessons during the last legislature and I hope that plans will be started early for whatever the society wishes to accomplish, and that we shall be able to make out influence for the public welfare felt during the next session as never before. The way to secure the attention of the legislators to our suggestions is to take an interest in politics from the very beginning. We should not sit back until the legislature meets, but pick our men at the primaries and at the general elections and help to elect them and let them know we are doing it. Should we make a mistake and our men get defeated, we are, of course, out of luck, but if our choice is wise and and a member knows that we have helped elect him, we have a right to command his attention.

CONCLUSION

Finally, I want to again urge the two most important principles in society success—harmony and cooperation. Play the game squarely; take your medicine like a man when you are licked; forget individual differences and work all the time for the society.

I wish to thank the officers, members of the council and committee for their assistance, splendid attendance at meetings, hearty cooperation and forbearance.

ACCOMPLISHMENTS OF THE STATE ASSOCIATION *

DUNCAN L. ALEXANDER, M.D., F.A.C.S.
TWIN FALLS, IDA.

It is with pleasure that I welcome you to the thirty-fifth annual meeting of this association. We are extremely fortunate in having as an honored guest tonight one of the surviving members, through whose efforts this association was born, Dr. I. H. Moore, now of Seattle, Washington. It has been a long road from the inception of the association to the present time. Many of the years were filled with trials to the profession and with much adverse legislation. However, all these unfavorable conditions have been met and surmounted through the untiring efforts of the great mass of the medical profession, especially those who are members of this association, as such members constitute the workers for advancement of medicine within the state.

At this time it may be allowable to point out the sphere of the physician and of the state medical association. The physician of today, if living up to the standard, must necessarily be well educated basically, trained in his profession and skilled in the application of this knowledge. He must be a psychologist, adept at managing the mental as well as the physical distress of his patient. His first thought should be as to the welfare of every case he undertakes, but still he must reserve that amount of business judgment which enables him to demand and receive a just remuneration for services rendered, in order that he may pursue further study, thus maintaining himself and family in a manner becoming his position.

In passing from the individual to the group, i.e., the State Medical Association, to me the first and most fundamental thing to be considered is the establishment and maintenance of the legal requirements necessary to practice medicine and surgery; to prevent all short cuts to the profession as is advocated by men of pseudoscientific minds; in other words, the dissemination of advanced medical knowledge and the prevention of legislation permitting scientific retrogression. Here I most firmly believe the problem is to a great extent solved by the further upbuilding of the Public Health League of this state. I invite you to pursue its efforts in the past years.

Second, the spreading of the knowledge of sound medical sense among the public. Here I wish to comment on the attitude taken by the better class of newspapers and magazines which, always eager for the honest news as to the great work of science, have refused to print, as such, the commercialized babble of the cult. The Idaho papers have been unusually kind and considerate.

Third, on such annual occasions as these it presents a direct educational effort to the individual that he may glean the sifted knowledge from some member of the profession who is better endowed as an investigator and teacher.

It is my aim tonight to set forth some of the achievements of the past year and to make a few recommendations for the ensuing year. First, of the accomplishments of the association, through its various committees, is the establishment of a more satisfactory working agreement and schedule with the State Industrial Board, this schedule being the fees allowed in payment for industrial accident surgery within the state. This has been more or less difficult, inasmuch as the Industrial Board primarily held opinions diametrically opposed to that of the medical profession of the state. However, with the aid of the executive secretary of the Idaho Public Health League who rendered inestimable service in comparing the schedules, checking the laws of other states as compared with Idaho, and in arranging the various meetings, the task was accomplished we believe in a satisfactory manner. This committee, which was composed of two members from the northern part of the state, two from the midpart of the state, and one from the southern part, met on many occasions to finish the task. While much time and effort were expended, the committee feel repaid by the success attained. Dr. James L. Stewart as chairman of this committee should, and I know will receive the thanks of each individual practitioner of the state.

Second, a contact with the State Teachers' Association has been made through its health society, whereby three members of the medical society have been asked to work in conjunction with a committee from the teachers' association in recommending a course of instruction in physiology and hygiene to be taught in the grade schools, in the high schools and in the teachers' colleges. I believe this to be an important factor in giving us an opportunity to place sane hygiene and a safe preliminary medical instruction before the rising generation.

Third, the familiarizing of the members of the association with a periodic health examination, as

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* President's Address. Read before the Thirty-fifth Annual Meeting of Idaho State Medical Association, Twin Falls, Ida., Aug. 29-31, 1927.

promulgated by the American Medical Association. Here, again, I cannot speak too highly of the endeavors of the Public Health League in placing the literature and information of this movement before the members of the profession in the state at large. One hundred thousand pieces of literature dealing with the subject have been distributed within the state in the last four months to the profession and the laity.

Fourth, we have successfully met all adverse legislative activity. During the last legislative session the osteopathic bill, which provided that the osteopaths might do surgery, was defeated. Here, again, I must call attention to the efforts of the Public Health League in defeating this bill. Recently, during a visit to a sectional medical society meeting in one of the intermountain states, it was brought to the notice of the meeting that several vicious bills were before the Senate and House of Representatives of that state. It astounded me that this great state, with five to six times the number of practitioners in the state of Idaho, had no organization capable of constantly watching and handling its legislative affairs; consequently sudden activity on the part of the members present was necessary to combat the measures. It was with some feeling of pride that I explained the workings of the Public Health League of Idaho, and I venture to say within the immediate future that such an organization will be established within that state.

Fifth, the acceptance of group malpractice insurance, whereby the physician is carried at a rate much lower than the single policy form. The saving on a small policy is sufficient to more than pay the annual medical society dues; all applicants, however, are required to be members of their State Medical Association. This shows the position to which organized medicine has arisen in the estimation of the large insurance concerns. A practitioner not a member of the State Medical Association is refused insurance as an undesirable applicant.

Sixth, one effort that did not lead to a successful termination was the influencing of favorable legislation on behalf of the Idaho Tuberculosis Hospital. Although every effort was made on the part of the committee, it could not be accomplished because of the program of economy being followed by the present administration of state affairs. The project is a worthy one and I commend it for your further consideration and support.

Many more minor accomplishments could be cited, if time would permit. Suffice to say that every committee worked harmoniously with great effort to accomplish its task. After briefly reviewing the work of the association for the past year, I wish to put forth a limited number of recommendations to be considered by the incoming administration.

First, as the Public Health League is intimately and necessarily a part of the medical profession of the state, I would heartily recommend that some scheme be worked out, whereby the finances of the league could be more steady. I have suggested to Mr. Paul Davis, executive secretary, that he secure permission from all the members that they honor a draft each and every month for their monthly dues, thereby giving a definite and constant income. If such a method could be put in force, more time could be available for the League's activity. I most earnestly request that some action be taken, as the League has been and will be our safeguard in legislation. If no other feasible method is presented, I would recommend the union of the State Medical Association and the Idaho Public Health League.

Second, that more attention be given to the familiarizing of the profession and the laity as to the value of periodic health examination. I would suggest that at least one, or better two meetings of the component societies be given over to a thorough study of this subject. Insurance companies regard it as a good investment, and recommend and pay for the same among their policy holders.

Third, that the physicians, both within and without the association take a keener interest in civic affairs, as without doubt during the next two years coming legislative enactments will vitally affect the status of the profession at large. In this connection I wish to call attention to the Basic Science Bill, which provides that all members of any healing art pass a basic examination on such essential subjects as anatomy, pathology, histology, physiology and chemistry. To my mind, this would be but a fair bill as the basic education of all healing art should be equal. This would leave the therapeutic aspect of the various schools free from controversy. No one should be granted the right to treat the sick unless he has knowledge of the organism as a whole.

Fourth, that more active effort be put forth in regard to the local, state and national societies. In the first instance, as to the preparation of good papers, lantern illustrations and data, thereby developing local talent and increasing local attendance. In this conjunction I wish also to point out a scheme successfully tried by the South Side Medical Society, that of having several meetings during the year composed of a symposium on various subjects. This has proven satisfactory in every meeting held.

Fifth, that the state and national societies should be regarded and attended not only as an educational feature, but also as a self-measurement of our own ability as compared with the men in other parts of the state and nation, thereby acquainting ourselves with the latest advancements of medical and surgical achievements in various parts of the world.

Sixth. I have purposely placed this item in the last position—the further advisability and necessity of keeping alive the contact made with the State Teachers' Association. I regard this as one of our great futrue possibilities for good.

Here I wish to heartily commend the excellent work of our secretary, Dr. J. N. Davis, for his untiring efforts on behalf of this association.

Without question the rapid changes, progressive and retrogressive, in our modern life, must necessarily influence the conditions within the medical profession. Knotty problems will be presented more frequently and rapidly than in former days. It is necessary, therefore, that the members of the profession and of the societies as a whole develop to meet these questions.

An article in a recent magazine impressed me greatly and I believe very appropos here. A young actor, taking his first major part in a play, was being advised by his elder colleague to put forth his best efforts in each and every act. As he expressed it, "Play to the king, there is a king in every audience." The opening night came with rain and blizzard; consequently an empty house except for a handful of newspaper men and critics. Imagine the feeling of the young actor as he viewed the empty seats. Although not knowing the presence of the critics, he remembered his old friend's advice, "Play to the king," which he did. His king was his art. The critics recognized this and he was made.

Each and every man in the profession has a king —the "science of the practice of medicine." Gentlemen, play to your king.

Mass of Safety Pins in Stomach. The mass of pins and food debris removed by George Blackburne, Newark, N. J. (Journal A. M. A., Sept. 24, 1927), from the area where the pins had perforated, weighed 295 Gm., one pin weighing 1 Gm. The patient stated that she swallowed the pins about thirteen years before, while working as a domestic, because she was hungry. She kept up the practice for four or five months. She was married ten years before and has given birth to four children since that time. During the past six months she had dyspeptic symptoms with vomiting. No psychotic symptoms were evident; she had the average mentality of a Polish peasant woman. Both the patient and her husband are of the senile dwarf type, as classified by Dr. Beling.

ORIGINAL CONTRIBUTIONS

DUODENAL ULCER *

E. Starr Judd, M.D.
ROCHESTER, MINN.

During the last few years I have been more and more impressed by the fact that duodenal and gastric ulcer are two separate and distinct lesions. In a certain proportion of cases the two lesions occur simultaneously. Gastric cancer and duodenal ulcer occur simultaneously in about the same proportion and these two lesions are entirely different. It is not surprising that we have fallen into the habit of considering duodenal and gastric ulcer together as it is only recently that duodenal ulcer has been recognized. Not many years ago Moynihan and Mayo were insisting that many of the cases that were being diagnosed and treated as gastric ulcer were really duodenal ulcer. Osler's System of Medicine, published in 1914, devotes only a few lines to duodenal ulcer in the chapter on ulcer of the stomach, and the same may be said of the other text books dealing with the subject.

In the years 1925 and 1926 at the Mayo Clinic 1897 cases of ulcer of the stomach and duodenum were verified by operation. Of this number 1662 (87.6 per cent) were duodenal and 235 (12.4 per cent) were gastric. The number of duodenal ulcers as compared with gastric ulcers is probably considerably higher than these figures would indicate, because a greater number of cases in which duodenal ulcer is diagnosed clinically are treated medically. From the nature of the lesion it is probable that duodenal ulcer heals of its own accord more often than the gastric ulcer, so that all evidence tends to point to the fact that duodenal ulcer is much more common than gastric ulcer.

In many instances the duodenal lesion is a localized area of inflammation. Sometimes the process is more diffuse and extends throughout a considerable part of the upper third of the duodenum. In still other cases a true ulcer is present. Duodenal ulcer must be regarded as of frequent occurrence and as a comparatively simple lesion.

Before determining what plan to follow in the treatment of duodenal ulcer it may be well to consider some of the fundamental facts regarding the lesion. It has been well established that ulcerations in the duodenum are benign, in this respect differing from similar lesions in the stomach. Re-

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* Read before the Sixth Annual Meeting of Pacific Northwest Medical Association, Boise, Ida., June 27-29, 1927.

peated examination of necropsy specimens and clinical data for evidence of primary carcinoma of the duodenum has brought the same result, that is, that cancer does not start in the first part of the duodenum. In the case of an ulcer of the stomach it is impossible to say without microscopic study whether it is benign or malignant. Therefore, it would seem that gastric ulcer is essentially a surgical lesion from the beginning. However, in view of the fact that duodenal ulcers are benign there is no objection to carrying out any sort of conservative treatment that offers a prospect of relieving the symptoms and curing the lesion.

Some years ago I noted that duodenal lesions are not all of the same ulcer type; further investigation has shown that there are at least two distinct lesions (figs. 1 and 2). I now wish to emphasize a consideration of these two distinct lesions in the duodenum either of which may be found in cases in which there is a history of chronic peptic ulcers. The first is the true ulcer which is recognized by congestion and stippling of the surface of the serosa with the formation of more or less scar tissue, adhesions and deformity of the duodenum. The wall of the bowel is always indurated and a tumor may be found as a result of the defensive reaction of the surrounding tissues, if the ulcer has slowly perforated the bowel. On opening the intestine a crater ulcer is seen. The second type of lesion, called duodenitis or submucous ulcer, is one in which there is congestion and stippling of the serosa but little or no induration. Palpation of the duodenum is negative and, when the bowel is opened, a lesion of the mucosa can not be found or at most only one or more superficial small mucosal abrasions. These might be termed healed ulcers, except for the evidence of an organic process going on in the wall of the bowel, as shown by the congestion, edema and stippling, and the fact that they are causing symptoms. Microscopic examination reveals little or no abrasion of the mucosa, but the submucosa and at times the muscle layers are infiltrated with lymphocytes. Often there is a tendency to constriction of the bowel in these cases; it is difficult to determine, however, whether this is due to true spasm or true narrowing. Clinically there is little if any difference between the two types. The roentgenogram shows spasmodic deformity in both lesions. That duodenitis is not a stage from which true ulceration invariably develops is shown by the fact that the average duration of symptoms in the two lesions is about the same. MacCarty has reviewed ninety-seven excised, localized, inflammatory duodenal areas. He believes that the pathologic picture of duodenitis is that of cellular destruction with congestion, edema, and migration of leukocytes, lymphocytes and endothelial leukocytes. The condition may be localized or diffuse.

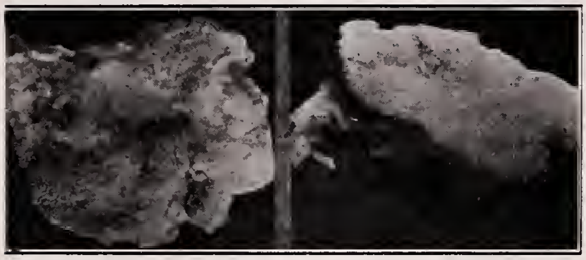

Fig. 1. Fig. 2.

Fig. 1. Duodenal ulcer.

Fig. 2. Duodenitis (the depression is an artifact).

The recently advocated treatment of duodenal ulcer by extensive resection of the first portion of the duodenum and pyloric end of the stomach has led to interesting observations. Konjetzny finds that more or less extensive gastritis and duodenitis are present in all cases of gastric and duodenal ulcers. He found gastritis and duodenitis in twenty-two cases of duodenal ulcer. All stages of scperficial ulceration are seen, varying from tiny abrasions to ulcers of appreciable size. Strauss also found the entire duodenum to the point of resection infiltrated with lymphocytes, plasma cells and eosinophils.

That duodenitis is a primary process is borne out by the long history. A relationship exists between duodenitis and chronic ulcer. Aschoff believes that a chronic ulcer forms as the result of unknown mechanical factors superimposed on chronic duodenitis. The importance of the acid factor is still undetermined. Etiologic factors causing duodenitis are not known. Pathologic data in duodenitis call attention to the work of Rosenow, as the condition found closely resembles lesions produced by him in animals by injecting specific strains of streptococci. It is of interest that this duodenitis type of lesion is the one that always results from the experimental production of ulcers by infection. The only difference is that the experimentally produced lesions heal promptly, while the others are chronic. It is unusual to be able to produce chronic ulcer by injecting ulcer strains of streptococci into the blood stream. Contrary to this, however, are the ulcers that are produced experimentally by duodenal drainage. A factor in the production of these

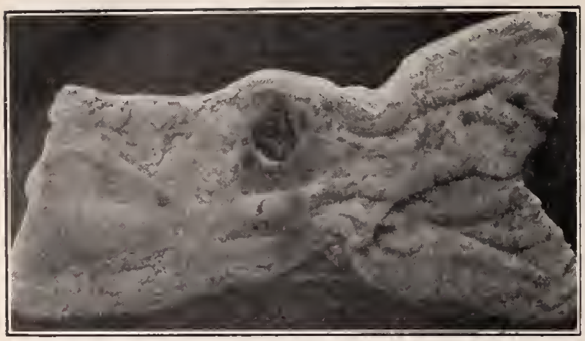

Fig. 3. Perforating duodenal ulcer in a dog fifty-eight days after Eck fistula (Mann).

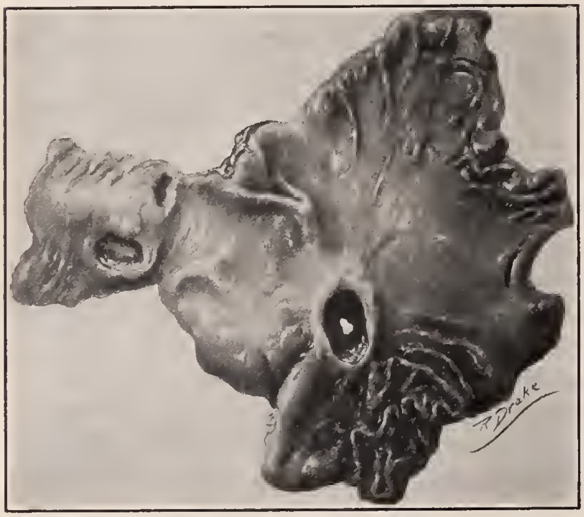

Fig. 4. Perforating gastric ulcer and duodenal ulcer from complete stricture of common duct. Dog died due to perforation of gastric ulcer (Bollman).

ulcers would seem to be a change in the physiologic processes. The ulcers are invariably chronic with definite craters, and are in every way similar to those seen at operation. Whether the inflamatory lesion is the result of infection and the true lesion the result of disturbed physiological function has not been determined (figs. 3 and 4).

It would seem as though removal of foci of infection and general measures with dietary regimen would offer a good prospect of clearing up a localized area of inflammation in the duodenum, and the realization that such a lesion frequently exists lends support to medical management in certain cases.

In considering definite indications for the surgical treatment in duodenal ulcer, we first think of perforation. It is agreed that in cases of acute perforation operation must be performed immediately. In certain other cases there seems to be a chronic perforation or a slow leak or penetration of the duodenal wall; these can usually be recognized by the severity of the pain. If it is intense and requires an opiate for relief, I believe that surgical measures are the safest. A difference of opinion exists with regard to hemorrhage. In cases of duodenal ulcer, hemorrhage is usually acute and sudden, without other signs or symptoms. Some of the European surgeons are inclined to feel that an emergency operation with resection of the stomach should be performed in case of acute hemorrhage, and have quoted statistics to show that results from such treatment are better than have been obtained by conservative measures. My experience in these cases prompts me to follow the conservative plan, that is, keeping the patients quiet with an occasional dose of morphin, and applying ice caps on the abdomen. Most of them will pass the emergency safely. I do not believe that transfusion and intravenous medication should be instituted hurriedly; too often this results in a recurrence of the bleeding. I have not felt it necessary to operate because of one hemorrhage, since in many cases no further hemorrhage occurs. If it does recur surgical measures are definitely indicated, and the operation should be of a type to remove the ulcer, because in a certain per-

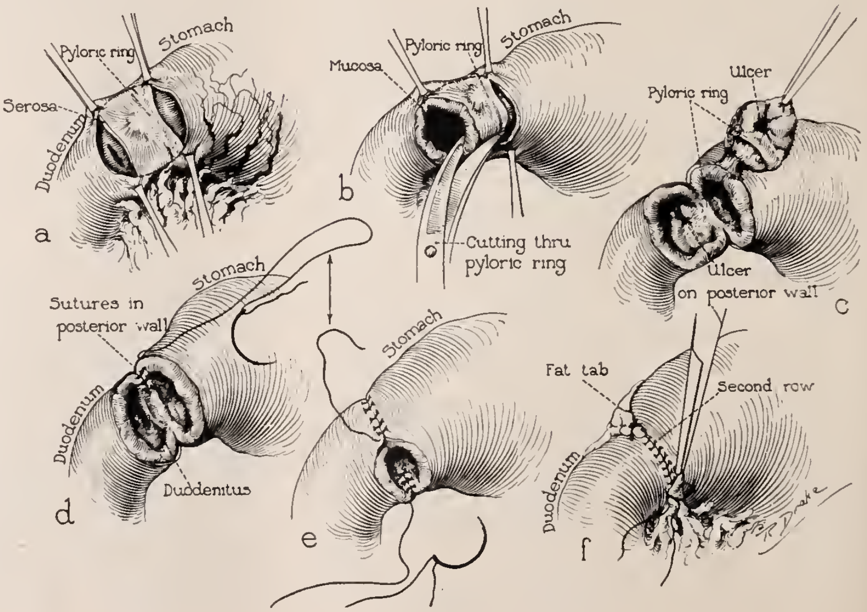

Fig. 5. Excision of duodenal ulcer and gastroduodenostomy.

TABLE 1.

MISCELLANEOUS COMPARISONS: DUODENAL ULCER, GASTRIC ULCER, AND SO FORTH

	Male	Female	Cases	Dates
	Years		Based on	
Average age:				
Duodenal ulcer	43.41	42.15	5391	1-1-06 to 1-1-22
Gastric ulcer	47.21	46.14	1480	1-1-06 to 1-1-23
Double ulcer (gastric and duodenal)	49.77	45.64	251	1-1-06 to 1-1-22
Gastric cancer	54.12	52.20	1912	1-1-10 to 1-1-21
Sex incidence:	Per cent			
Duodenal ulcer (almost 3:1)	73.70	26.30	2905	1-1-15 to 1-1-20
Gastric ulcer (almost 3:1)	74.00	26.00	658	1-1-15 to 1-1-20
Double ulcer (almost 3:1)	71.31	28.68	251	1-1-06 to 1-1-22
Gastric cancer (almost 4:1)	78.45	21.54	1912	1-1-10 to 1-1-21

Associated lesions:

Double ulcer, 3.5 per cent (251 had both gastric and duodenal ulcer of 7024 gastric and duodenal ulcer cases, from January 1, 1906, to January 1, 1922).

Diseases of gallbladder, 2.7 per cent (of 1978 cases of duodenal ulcer in which operation was performed, fifty-five also had operations on the gallbladder, from January 1, 1913, to January 1, 1917).

Multiple ulcers of duodenum, 0.71 per cent (of 4901 cases of duodenal ulcer in which operation was performed, thirty-five showed multipl ulcers of duodenum, from January 1, 1906, to January 1, 1921).

Recurrences: "Between 1905 and 1922, inclusive, thirty-seven patients with recurring gastric or duodenal ulcer were examined in the Mayo Clinic. On thirty-three a second operation was performed. Nine of these were women. During this time approximately 700 operations for chronic gastric and duodenal ulcer were performed."

TABLE 2.

PERCENTAGE RATIO OF ORGANIC DISEASE OF STOMACH AND DUODENUM — DIAGNOSED BY ROENTGEN RAY OVER A FOUR-YEAR PERIOD

Year	Duodenal Ulcer Per Cent	Gastric Ulcer Per Cent	Gastric and Duodenal Ulcer Per Cent	Cancer of Stomach Per Cent	Cancer of Esophagus Per Cent
1923	68.57	6.67	1.33	19.68	3.72
1924	71.52	7.36	1.31	16.39	3.4
1925	71.36	7.77	1.36	15.85	3.63
1926	72.28	8.10	1.62	13.51	4.46
Average	71.12	7.56	1.42	16.01	3.86

centage of cases the hemorrhage recurs even after gastroenterostomy (fig. 5).

The indications for operating in cases of chronic dyspepsia, the result of ulcer of the duodenum, depend on several factors. The length of time symptoms have existed should be considered; if they have been present for a long time and especially if the patient has had several periods of good dietary be postponed. If the symptoms have been present for a short time only and treatment has not been instituted, this certainly should be done. There is plenty of evidence to show that ulcers heal spontaneously and also that dietary management started before the condition becomes chronic may result in complete relief of symptoms and probably in the healing of the ulcer. The age of the patient should be taken into consideration; a young person with a short history and mild symptoms should be placed on a dietary regimen for a considerable period. The severity of the symptoms in any case will help to determine the plan to follow, because if there is a constant tendency to perforation or bleeding or severe gastric upsets that are not relieved quickly by diet, operation is indicated. The patient's nervous tendency and his nationality should also be taken into consideration. Patients with a highly sensitive nervous system do not bear any type of operation on the stomach well, and the percentage of Jewish people with gastric ulcers is high. The ulcers are likely to be severe and jejunal ulcers are prone to develop after any type of gastrointestinal anastomosis. I believe that if the high-strung nervous patient can be kept even fairly comfortable with any form of diet and management, this is indicated rather than surgical measures.

All patients with duodenal ulcer should conscientiously try dieting before resorting to operation, since a certain number are undoubtedly cured by this treatment. Most of the patients are free from symptoms during the time they are under treatment. Very rarely perforation occurs during most rigid treatment. It is, however, a mistake to continue dietary treatment if nothing is being accomplished, and if the symptoms return with the least indiscretion. About 65 per cent of the patients with duodenal ulcer who enter the Mayo Clinic undergo operation. This implies that many duodenal ulcers, even though chronic, run a mild uncomplicated course, so that the patient may be treated and the operation deferred with the idea of eventually resorting to it, if the results of the treatment or the cooperation of the patient is unsatisfactory.

Duodenal ulcer is a common disease. Between twelve hundred and fifteen hundred patients thus afflicted are seen in our clinic every year. Roentgenographic statistics show that duodenal ulcer is nine times more frequent than gastric ulcer. The average duration of symptoms at the time of our examination is about nine and a half years. In most instances the onset is mild and intervals of relief are long. About 35 per cent of the patients have the typical complications, such as recurrent hemorrhage, varying degrees of obstruction, or perforation. A previous diagnosis had been made in only about 37 per cent of our cases.

The results of surgical procedures on the very obese patient with duodenal ulcer have not been satisfactory. I consider obesity, as well as active pulmonary tuberculosis, diabetes, or serious renal or cardiovascular lesions, contraindications to operation. In certain cases patients with active tuberculosis who were not doing well on a diet, were operated on with satisfactory results. Women as a rule cooperate better than men and the results following their treatment are better. The exact treatment sometimes serves a useful purpose in making a satisfactory differential diagnosis, a so-called therapeutic test. Surgery is indicated in the cases in which there is evidence of associated extragastric lesions. In many of the cases of duodenal ulcer cholecystitis with stones and appendictis are present, and in these surgical procedures are indicated without delay. Uncomplicated cases, especially those of long standing, by virtue of personal choice, should be operated on. Some of the patients reach the point where the diet is unbearable, and others are unable to obtain or to follow medical management; these should also be operated on.

Just what is accomplished by the different forms of treatment in cases of duodenal ulcer will not be definitely known until more is learned concerning the etiology. The opportunity in the last few years to study the stomach and duodenum in the cases in which resection and excision have been carried out may help in this respect. Much attention is being given to the inflammation in the stomach and duodenum, both in association with ulcers and independent of any sign of ulceration. Undoubtedly these lesions may exist for a short time and then heal and leave a scar as the only evidence of any trouble. Many scars of healed duodenal ulcers are found as a routine at necropsy. Management and dietary regimen undoubtedly accomplish the healing in some cases. Gastroenterostomy results in healing, although not in every case. I do not believe that the present wave of enthusiasm for resecting the stomach for duodenal ulcer will last very long. Gastroenterostomy is not an entirely satisfactory procedure, because in a certain percentage of cases secondary ulcers form. The best type of operation for duodenal ulcer is one that removes the ulcer and places the pyloric sphincter at rest.

Unfortunately we have no accurate statistics to show the result of medical treatment of duodenal ulcer. As nearly as we can estimate, operation offers more than 90 per cent complete and permanent relief of symptoms. Operation is definitely indicated after a fair trial of medical treatment has failed, and furthermore it is indicated in all cases in which symptoms are severe, whether or not the conservative treatment has been tried. Operation is not indicated if the history is short and the patient is doing well on medical treatment, and it is not indicated in the cases in which, because of associated lesions, operation is an extra hazard, if the patient can be kept reasonably comfortable on a diet.

SURGICAL TREATMENT OF DUODENAL ULCER *

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The etiology of duodenal ulcer is still somewhat obscure, though improper diet, trauma and hyperacidity have variously been suggested as its causes. No doubt all these factors contribute to its development and are naturally more or less interrelated, and when working together might produce an ulcer. A diet which is irritating to the mucous membrane of the stomach would naturally have a stimulating effect on its secreting glands and help to raise the acidity, which in turn would increase gastric peristalsis with the resulting trauma to the first part of the duodenum, and particularly the anterior wall where most of the duodenal ulcers occur. We may say that hyperacidity due to improper diet can, and probably does, produce hyperperistalsis, which in turn might cause traumatic, gastric or duodenal ulcers.

Rosenow and his coworkers at the Mayo Clinic consider infection as the chief cause of gastric and duodenal ulcers. They believe they have even isolated the particular organism which produces these ulcers. In recent experiments they have taken cultures of green-producing diplostreptococcus from ten

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* Read before King County Medical Society, Seattle, Wash., May 16, 1927.

ulcers and injected these cultures into rabbits, resulting in 90 per cent gastroduodenal hemorrhagic erosions and ulcers. These same patients, with the ulcers from which the cultures were obtained, were carefully examined for foci of infections, and cultures were made from the tonsils, teeth, nasopharynx, and prostate or cervix, whenever possible. The same green-producing diplostreptococcus was obtained from most of the foci. On such experimental work is based the theory of the selective action of this particular organism on the stomach and duodenum. Further experimentation may eventually give us a serum which will have a curative effect on gastroduodenal ulcers. The infection theory has gained sufficient recognition so that the treatment, whether surgical or medical, includes when possible the removal of various foci of infection which can be recognized and treated.

Most duodenal ulcers are entitled to medical treatment before surgical interference. Just when the duodenal ulcer patient should stop being treated medically and be referred to the surgeon is a question in which there is quite a wide difference of opinion. The surgeon who has been unfortunate enough to have had a series of perforating ulcers is apt to become more radical in his treatment.

Fortunately we have passed the trying period when medical clinics boasted of the large number of cases under their treatment, who had been previously operated upon without benefit. We all remember seeing duodenal ulcers too long treated medically. But at present I am sure there is with fuller knowledge better understanding between surgeons and internists regarding the character of treatment of duodenal ulcers, as there are at hand certain definite indications that call for either medical or surgical treatment.

Surgical intervention is indicated when there is: (a) A marked degree of obstruction, (b) repeated and serious hemorrhages, (c) when the ulcer is of long standing and has resisted medical treatment, (d) when the patient has a well-defined ulcer and his occupation is such that he is often far removed from a good hospital and competent surgeon, the danger of perforation or hemorrhage being too great to take the chance of delay, (e) perforation.

Perforation, of course, demands immediate operation. The mortality is in direct proportion to the time between perforation and operation. It is impossible to tell beforehand when such a serious complication may happen. I recall cases in my practice, in which perforation was the first apparent indication that an ulcer was present. I remember one case in which a young man of twenty-one came with symptoms of duodenal ulcer of only two weeks standing. He was given bismuth and magnesia and suggestions regarding his diet. I did not see him until a year later, when I was called to operate for a perforated duodenal ulcer. He informed me that the symptoms left him after he first saw me, and he had had no further trouble until the perforation occurred.

The surgical treatment of duodenal ulcers has undergone some radical changes in the last decade. Whereas ten years ago posterior gastroenterostomy with occasional excision was the usual operation, now excision of the ulcer with various types of pyloroplasties and even excision of one-half to two-thirds of the stomach are gaining popularity.

In performing an operation for duodenal ulcer the average surgeon should confine himself to the type of operation thoroughly tried out and which in his experience has given him the best results. To get the best results we cannot lay down hard and fast rules regarding the type of surgery. The operation must be one suited best to meet the requirements of that particular case.

Gastroenterostomy still retains a well deserved popularity with a great many surgeons. When the indications are definite, it is usually conceded that it gives good results in perhaps 90 per cent of the cases. Of the 10 per cent where the results are not good, about 2 or 3 per cent develop postoperative gastrojejunal or jejunal ulcers, and the other 7 or 8 per cent develop more or less stomach complaints of one kind or another, and do not feel that they have been greatly benefited by the operation.

It is doubtful whether the newer types of operation can produce any better results than gastroenterostomy when applied to all cases of duodenal ulcers. The encouraging factor about the cases that go wrong after gastroenterostomy is that we can, to give the patient relief, resort to more radical procedures.

The hemorrhagic type of ulcer cannot be treated as the ordinary type of ulcer which is not prone to bleed. Aside from the patient's weakened condition due to loss of blood, there is a possibility of the hemorrhage being fatal. Though surgical interference may be the only treatment in such cases, the time to operate is not when the patient is having or has had a severe hemorrhage. It must be borne in mind that such a patient is already in shock from loss of blood and the additional shock of an operation may have a fatal termination.

It is very difficult for a surgeon to stand by when he is aware of the possibility of the patient bleeding to death. However, I am satisfied that under the proper treatment the mortality rate from bleeding of an ulcer is well under 5 per cent, but when the operation is performed either during a severe hemorrhage or immediately following it, before the patient has recovered from the shock of the hemorrhage, the mortality rate will be at least 25 or 30 per cent.

On rare occasions it may be necessary to do a transfusion. I consider it only as a last resort, as there is the possible danger of raising the blood pressure and prolonging the hemorrhage rather than checking it. However, recently I had a patient who had a very severe hemorrhage, the hemoglobin going down to 25 per cent and the red count to 1,100,000. As he was doubly shocked on account of the suddenness of the hemorrhage and the amount of blood lost, I felt compelled to do a transfusion. He responded remarkably well to the transfusion and was promptly relieved of all distressing symptoms, including marked air hunger from which he was suffering.

Apparently he had no further hemorrhage following transfusion and his red count the next day went up over 500,000 and hemoglobin about 5 per cent. I have had to do transfusion under similar circumstances a number of times and have never had reason to regret it.

I was very much interested on my recent trip East, particularly at the Mayo Clinic, to find that some of surgeons excised duodenal ulcers whenever it was possible. Of course, when the duodenum was markedly fixed, making it difficult to deliver and excise the ulcer with safety, a gastroenterostomy was performed. Most of them excised the ulcers, including the pyloric ring. The stomach and duodenum were then sutured together in such a way that it gave a larger opening than normal. In some cases this seemed to be much simpler than gastroenterostomy. Thus far, however, these cases have not been followed long enough to state what the ultimate results are.

It has been frequently stated that the alkalizing effect of the stomach contents in gastroenterostomy is a great help in preventing further formation of ulcer. How much there is to this theory time will tell. If Rosenow's theory is correct, which seems very well established, that the ulcers are of infectious origin, it is possible that the alkalizing effect of the stomach contents is not as big a factor in the prevention of ulcer as we have believed. Judd says he believes that the enlarging of the outlet of the stomach by the removal of the pyloric ring probably helps neutralize the high acid contents of the stomach, as in gastrojejunostomy. I shall wait with interest the statistical reports on this type of operation.

Masson of this Clinic is still performing gastroenterostomy for duodenal ulcer, claiming that his results are too satisfactory to change for a more untried method. Sistrunk of the same clinic does routinely a duodenojejunostomy a few inches below the site of the anastomosis of the stomach and jejunum. He does this in order to prevent the regurgitation of the bile into the stomach which is sometimes a rather distressing postoperative complication, following the ordinary posterior gastroenterostomy. It has been my experience that this very annoying symptom usually manifests itself within the first two or three weeks after operation. When it occurs, prompt use of the stomach tube giving gastric lavage will usually give prompt and permanent relief. It is rather rare for this complication to persist long after an operation.

A recent operation for duodenal ulcer, which I believe was performed first in Vienna and has been adopted in this country by some surgeons, is resecting the lower half of the stomach and anastomosing it to the side of the duodenum. That is the Polyea operation commonly done for cancer. The purpose of this is to remove the main ulcer-bearing area of the stomach and thereby prevent the recurrence of ulcer.

A recent article in *Surgery, Gynecology and Obstetrics,* from the surgical clinic of Mt. Sinai Hospital, New York, states that quite a large series of duodenal ulcers treated in this way have given very good results. Their main argument for doing so radical an operation is the fact presented in the statistics of that hospital which show something like 30 per cent of gastroenterostomy cases who develop gastrojejunal or jejunal ulcers, while other clinics state there are about 2 or 3 per cent of the cases of gastroenterostomy that develop this complication. Other statisticians have given a little higher percentage than the latter. One is almost compelled to believe that statistics vary with the surgeon's enthusiasm over the type of operation he is doing.

Personally I feel it is unjustifiable to do such a radical operation for a duodenal ulcer. Why take greater chances of a larger primary mortality, when we all know that gastroenterostomy alone will undoubtedly cure a large majority of duodenal ulcers.

Dr. Mann, in charge of the experimental laboratory at the Mayo Clinic, has had quite a large series of experiments on dogs, in which they have been able to produce duodenal ulcers and then performed gastroenterostomy and found the ulcers invariably healed. He said if he himself had a duodenal ulcer, he would want a gastroenterostomy done in preference to other surgical procedures. This I consider a pretty strong statement in favor of gastroenterostomy.

Therefore, I wish to emphasize that gastroenterostomy does not yet belong in the discard and certainly has a big field of usefulness in properly selected cases. Before we abandon it for the various plastic operations at the outlet of the stomach, we must be pretty well assured that these operations are going to give at least as good results as gastroenterostomy.

When operating for gastric or duodenal ulcer the appendix should always be explored, and if diseased, removed. I have found it so frequently diseased in association with ulcers that I cannot help but feel it is an etiologic factor in the development of ulcer. This observation supports Rosenow's viewpoint regarding the infectious origin of ulcers. We also find not infrequently a diseased gallbladder associated with ulcer, which also should be taken care of in order to secure the best results.

In conclusion, I would say that surgery for duodenal ulcer is passing through what we might term the transitional stage. Gastroenterostomy, which has long been considered the operation of choice in nearly all cases of duodenal ulcer, is being succeeded by plastic operation. The more radical surgeons are even resecting from one-half to two-thirds of the stomach for this disease.

We cannot hope for 100 per cent cures in any type of operation, and we know that the newer types are not without their hazards and complications. In a recent review from Russian literature, jejunal ulcers were reported following the Polyea operation in 4.5 per cent of the cases.

The mortality of gastroenterostomy is probably 2 per cent or less, while in the Polyea operation it is about 9 to 10 per cent, and statistics have not shown that the results are any better, certainly not enough better to warrant the additional risk.

In suitable cases, where plastic operation can be done with excision of ulcer, the mortality should be very low. I would say, however, if the ulcer is accompanied by marked hyperacidity, that gastroenterostomy should have the preference over just excision of the ulcer on account of the more definite alkalizing effect of the former operation.

We canont hope for a more uniform surgical treatment of this disease until we have more definite knowledge of the etiology and the true causative factors underlying the occurrence of duodenal ulcers.

PEPTIC ULCER

END RESULTS IN SURGICAL TREATMENT, WITH A FEW POINTS ON SOME SURGICAL TECHNIC *

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Divided opinion as to the merit of gastroenterostomy when done for peptic ulcer is current because both satisfactory and unsatisfactory results have been reported by capable surgeons. With this in mind a study of the case records of the patients who have been operated upon by us was begun and, while this group is not large, we have tried to make up for the small number by accurate personal investigation of most of the cases. This study has revealed some matters of interest in connection with this particular operation which may be worthy of note.

In a study in our clinic by Drs. Blackford and Dwyer, of some 2500 consecutive histories of patients complaining of gastric symptoms, it was found that only about one out of every seven received a diagnosis of organic lesion of the stomach and duodenum. Only one out of every three, diagnosed as gastric or duodenal ulcer, came to operation. In other words, only about one out of every twenty-one of these patients who came in thinking that they had some organic lesion of the stomach and complaining of what they thought were symptoms of such disease really came to operation for peptic ulcer. One hundred and four gastric and duodenal lesions have been treated surgically, of which twenty-three were gastric ulcers and eighty-one dudenal ulcers.

In this series the histories were all written and the physical examinations were all made by competent internists. The average age of the male with duodenal ulcer was forty years, that of the female forty-three years. Duodenal ulcer occurred in about the proportion of three in the male to one in the female. The age of the male with gastric ulcer averaged forty-eight years and of the female forty-one

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* Read before the Thirty-fifth Annual Meeting of Idaho State Medical Association, Twin Falls, Ida., Aug. 29-31, 1927.

years. Here again the proportion of male to female was about three to one in number.

The histories alone, in 80 per cent of these cases, pointed conclusively to peptic ulcer. There was the story of hunger pain. In fact, pain was the predominating symptom of peptic ulcer. This pain was usually present from a few days to a few weeks with complete, or practically complete, remission of symptoms for months. It was usually one of three distinct types. The first type of pain, due to intragastric or intraduodenal lesion, was that due to excessive peristaltic action. In these patients sharp peristaltic waves follow each other. The increased peristalsis results from the increased secretion, which is the result of the irritation produced by the ulcer. The next most frequent pain, of which the patients complained and described as a gnawing sensation, is due to the action of the hydrochloric acid upon the base of the ulcer. The third type of pain and that which is usually the most distinct of all is that of impending perforation with associated acute inflammation in and about the base of the ulcer. This pain often simulates gallstone colic and is not relieved by soda or food as are the first two types mentioned.

Tobacco habit has been noted in most of the histories of the male patients. Vomiting occurred in about 60 per cent of the cases. Hemorrhage, varying in amount from very slight to very large, occurred in about 25 per cent of the cases. As has been noticed often by other observers, the majority of these patients complained of acute exacerbations of symptoms in the spring and fall.

There was a small group of patients from whom practically no history of gastric symptoms could be obtained and in this group some of the ruptured gastric and dudoenal ulcers occurred. These patients gave absolutely no history of trouble up to the time of perforation. However, on rechecking these cases, some very good histories were elicited.

Next in importance to the history was the roentgenologic evidence. In this group of cases the positive errors of the roentgenologist in operative cases have been five, i.e., roentgenologic diagnosis of ulcer and no ulcer found at operation. Negative errors numbered ten, i.e., roentgenologic diagnosis negative and ulcer found at operation. This was a total positive and negative error of fifteen out of one hundred and four patients who underwent operation. These errors have been one positive and three negative for gastric ulcer and four positive and seven negative for duodenal ulcer, a total gross error of 14.4 per cent. Duodenitis was definite in three patients, listed as three of the negative errors among the duodenal ulcer cases.

Acute perforation occurred in fifteen patients. Four died; of these two were operated upon four days and one eight days after perforation; and a woman seventy years old was operated upon at six hours. Three patients with perforated gastric ulcer recovered, all operated upon within twenty-four hours.

There have been one hundred and nine operations for peptic ulcer upon one hundred and four patients. Two Horsley operations, four Finney, three Polya-Balfour, one Judd, sixteen excisions only, and eighty-three gastroenterostomies were done. Of the two submitted to the Horsley operation, both have done well, though one had a very stormy convalescence. From the Finney operation, one patient made an uneventful recovery; three had a considerable amount of immediate postoperative trouble. One of these had persistent vomiting which was finally controlled by daily gastric lavage of a very weak solution of nitrite of silver, and one had a duodenal fistula which finally closed spontaneously. The final results in these cases have been satisfactory. The three Polya-Balfour operations all gave satisfactory results except in one patient with syphilis of the stomach who died of pernicious anemia four years after the operation. Both patients who had the Judd operation had a very even convalescence in the hospital and, while the period of observation is shorter than that of any of the gastric operations, the results have been most satisfactory up to the present.

Of the eighty-three patients, upon whom gastroenterostomy was performed for peptic ulcer, we have been able to communicate personally with sixty-four. A physician spent from fifteen minutes to an hour discussion with each patient regarding his present condition. Of the remaining nineteen, eleven are dead and eight have been heard from indirectly through friends who had seen them within a year and a half after their operations.

We are most interested in the number of deaths and the poor results in comparison with the good. Following is a list of these results. There were four hospital deaths, or 4.8 per cent. One of these patients made an uneventful recovery but died from pulmonary embolism on the fourteenth day as he was leaving the hospital. One died on the tenth day from a complete separation of the gastrojejunal anastomosis. In this operation no nonabsorbable material had been used. The anastomosis had been made by catgut welded onto a straight needle.

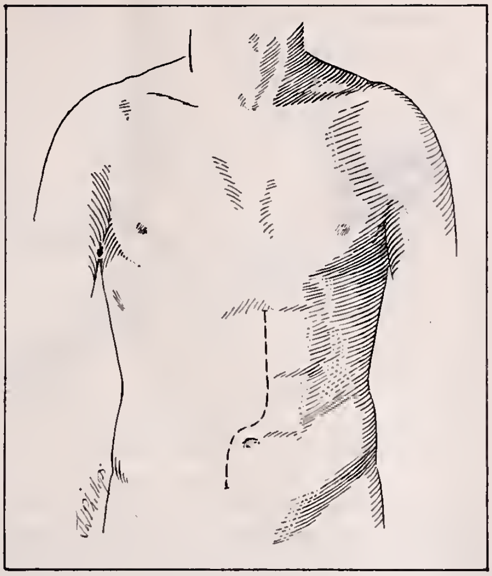


Fig. 1. Incision for stomach operations, one-half of incision being in one rectus muscle, the other half on the opposite side, thus permitting a stronger scar.

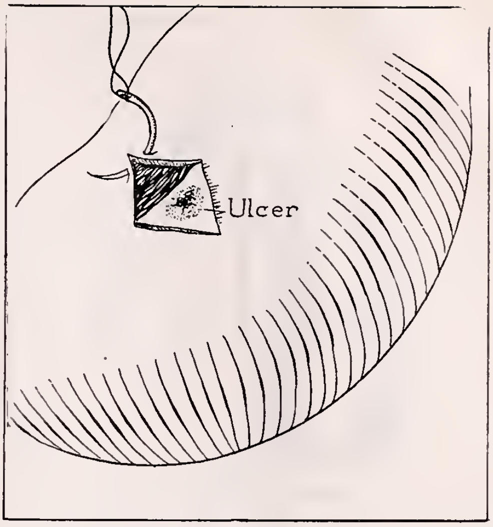


Fig. 2. Shows method of excising gastric ulcer. Edges of wound are being sutured before complete excision in order to prevent retraction of the muscle fibres, thus producing an unnecssarily large opening.

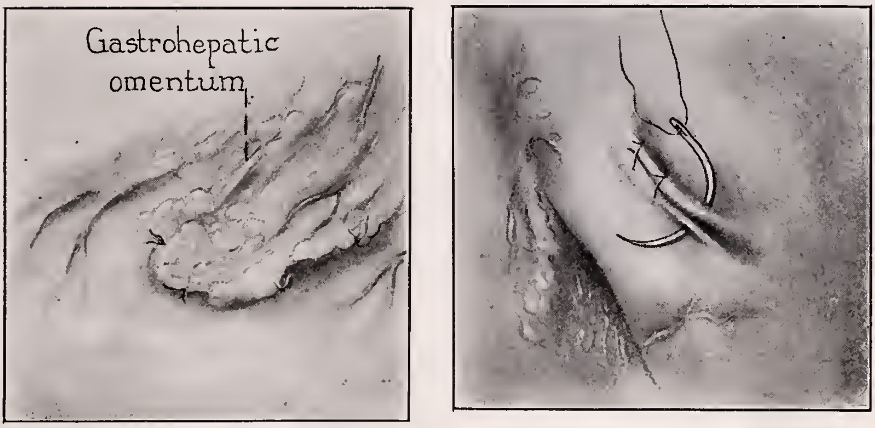


Fig. 3. Perforated peptic ulcer, showing omentum always tacked over the sutured perforation.

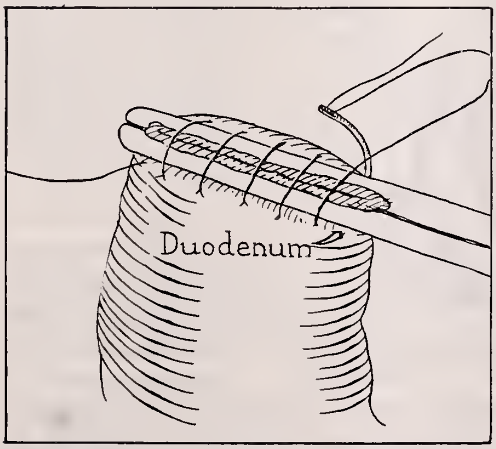


Fig. 4. Shows method of closing the duodenum after partial gastrectomy. Purse string suture will often leak.

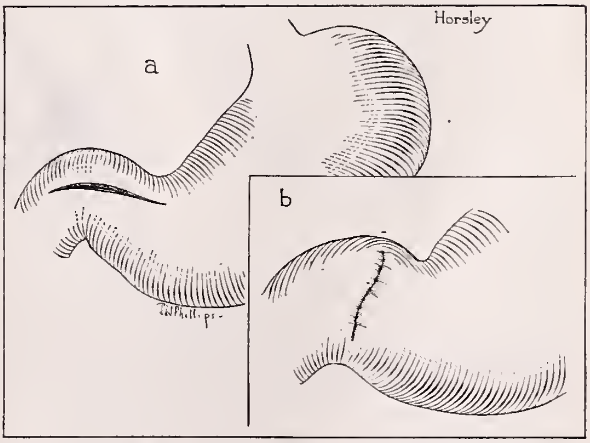


Fig. 5. Horsley pyloroplasty.

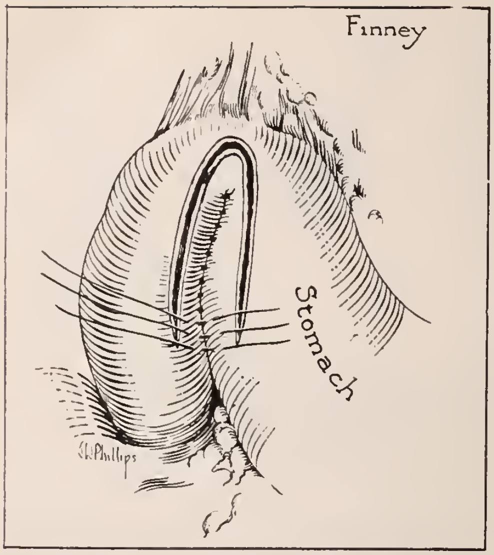


Fig. 6. Finney pyloroplasty.

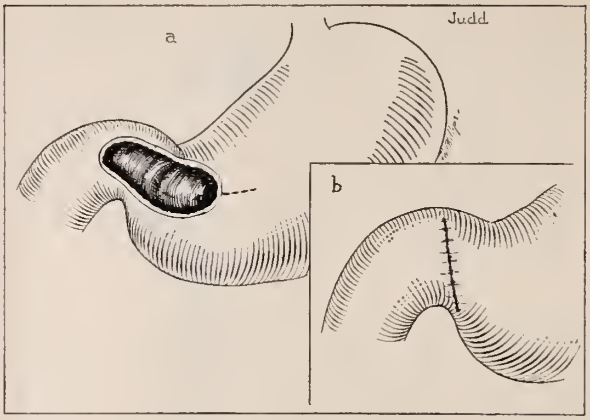


Fig. 7. Judd pyloroplasty.

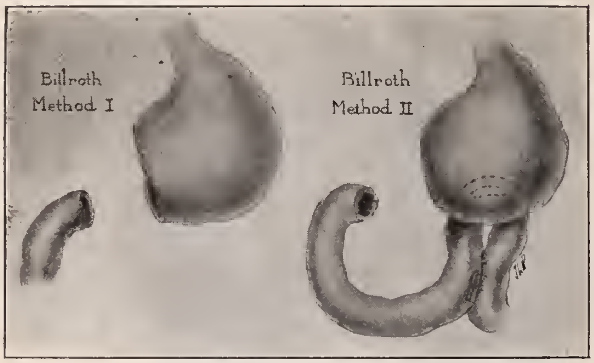
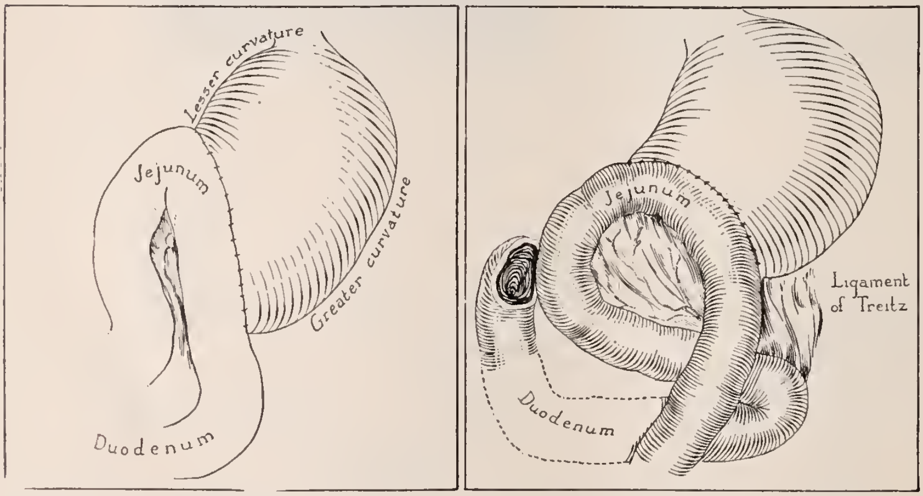


Fig. 8. Billroth, methods I and II.



Figs. 9 and 10. Two methods of doing the Polya-Balfour partial gastrectomy. (Fig. 9), Distal end of jejunum leaves stomach at lesser curvature. (Fig. 10), Distal end of jejunum leaves stomach at greater curvature.

This we had thought would withstand the digestive action of the gastric juice. At the postmortem absolutely no catgut could be found, even the knots having been absorbed by the tissues. The third patient died on the third day from pneumonia. The fourth died on the sixteenth day from postoperative insanity. A postmortem in this fourth patient showed that the gastroenterostomy opening was functioning normally and that there was no peritonitis. There have been seven late deaths in this series, two from what was undoubtedly perforation of a gastrojejunal ulcer. There have been ten results, or 13.8 per cent of the number of living patients, which have not been entirely satisfactory.

Two patients each had a large postoperative abdominal hernia. In a third case the anastomosis had to be disconnected on the seventh day because of persistent vomiting. It was found that the mesentery of the transverse colon had slipped down over the proximal and distal loops of the jejunum. This patient continued to complain of his stomach symptoms for about a year, when another gastroenterostomy was performed. This has since functioned satisfactorily, although the patient still complains of some symptoms.

In the fourth patient the anastomosis had to be disconnected on the fourteenth day because of persistent vomiting. In this instance also the mesentery of the tranverse colon had slipped down over the proximal and distal loops of the jejunum. The duodenal ulcer had been excised at the first operation. This patient still complains of some gastric symptoms.

A fifth patient continued to complain of pain and discomfort. Sixteen months after the first operation laparotomy was again performed. At this time many periduodenal and pyloric adhesions were found. There has been complete relief since the second operation. Patient number six is a neurotic individual who enjoys ill health. It seems impossible to make her admit that any part of her anatomy functions properly. In the seventh and eighth patients a gastrojejunal ulcer was excised and the anastomosis disconnected with complete relief. Patient number nine had a gastrojejunal ulcer but would not submit to a second operation.

The tenth patient with an unsatisfactory result is a little Scotch woman who lives up to all the stoic traditions of her country. Some ten years ago she was operated upon elsewhere for a duodenal ulcer, and a gastroenterostomy was performed. She was fairly comfortable for about six months, when the old gnawing, uncomfortable sensation returned. She suffered from this for eight years. Two years ago we disconnected a gastroenterostomy and excised a gastrojejunal ulcer. She was fairly comfortable for about five months after this and then returned with symptoms and roentgenologic findings of a duodenal ulcer. The first ulcer which was duodenal, the second which was gastrojejunal, and the third which is duodenal and which she now has, have all persisted in the face of the most careful medical management that would be accepted. This patient has refused a third operation.

Patients number one and number two, each of whom has a postoperative hernia, are very comfortable with snug fitting belts and no second operation seems advisable. There have been three others operated upon with complete relief (patients number 5, 7 and 8), which brings the unsatisfactory results to five cases or 6.9 per cent of those living. Among seventy-seven gastroenterostomies, which are functioning satisfactorily and all of which were done from one to ten years ago, only six gastrojejunal ulcers have been traced, or 7.7 per cent.

SUMMARY OF OPERATIVE CASES

10 CASES. 13.8 PER CENT NOT ENTIRELY SATISFACTORY

Case 1 and 2, postoperative abdominal hernia.
Case 3, disconnected on seventh day. Mesentery of tranverse colon slipped over proximal and distal loops of jejunum.
Case 4, disconnected on fourteenth day because of persistent vomiting.
Case 5, pain and discomfort. Eighteen months later, operation. Many periduodenal and pyloric adhesions. Relief.
Case 6, neurotic individual. Enjoys ill health.
Case 7, gastrojejunal ulcer, disconnected. Relief.
Case 8, gastrojejunal ulcer, disconnected. No relief.
Case 9, gastrojejunal ulcer.
Case 10, gastrojejunal ulcer.

15 PERFORATIONS

4 deaths.
  2 operated 4 days after perforation.
  1 operated 8 days after perforation.
  1 woman 72 years old died 6 hours after operation.
11 survived.

109 OPERATIONS FOR PEPTIC ULCER

2 Horsley.
  1 satisfactory.
  1 stormy convalescence.
4 Finney.
  1 satisfactory.
  3 stormy convalescence.
    1 persistent vomiting.
    1 duodenal fistula.
    Final results satisfactory.
3 Polya-Balfour.
  1 syphilitic ulceration and leather bottle stomach. Died four years later of pernicious anemia.
1 Judd.
  Satisfactory.
16 excision only.
83 gastroenterostomies.
  4 hospital deaths. 4.8 per cent.
    1, 14 days, embolism.
    1, 10 days, separation of gastrojejunal anastomosis.
    1, 3 days, from pneumonia.
    1, 16 days, postoperative insanity.
  7 late deaths. Gastric symptoms.
    1 acute appendicitis.
    2 perforating gastrojejunal ulcers.
    4 senility. No stomach symptoms.
72 living.
  64 communicated with personally.
  8 through friends.
  6, 6.9 per cent unsatisfactory.

NEW OPERATION FOR PROLAPSE OF RECTUM. The procedure devised by Jerome M. Lynch, New York (Journal A. M. A., Sept. 24, 1927), is said to be based on sound anatomic and physiologic principles. The abdomen is opened by a median incision, after which the patient is placed in the Trendelenburg position and the small intestines are walled off by laparotomy pads. Both leaves of the mesentery are cut close to the bowel, care being taken not to injure the blood supply. This incision is carried across between the rectum and the uterus in the female, and the rectum and the bladder in the male. The peritoneum of both leaves of the mesentery in the region of the culdesac is dissected back, so as to expose the lateral ligaments. The pelvic colon and rectum are pulled out of the pelvis and held taut while the operator proceeds to shorten the lateral ligaments by two or three interrupted chromic catgut sutures. After this a new pelvic peritoneal diaphragm is formed by suturing the peritoneum to the top of the pelvic colon and closing the rent between the bladder or the uterus, as the case may be. This entirely obliterates the culdesac and equally distributes the weight all over the pelvic diaphragm, thus preventing recurrence. If the uterus is retroverted, it is held in place by shortening the round ligaments.

THE CRIPPLE IN IDAHO *

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POCATELLO, IDAHO.

When we, as men of medicine, assume toward the human family the guardianship of all conditions physical, it is evident that the cripple, whether of the type mental, deaf, dumb or blind; the cardiac or nephritic; or the orthopedic, is primarily our charge and our moral responsibility never ceases until the limit toward normalcy, mentally and physically, is reached.

Under the present regime of caring for the deficient, the deaf, blind and mental, when the degree of incapacity is defined, immediately become the wards of the state. It is too optimistic to assume, as yet, that the medical cripple, more especially the cardiac, has reached the full economic consideration he deserves, but the orthopedic child, whose only offense against normalcy is a congenital or acquired deficiency of bone or muscle to some degree, has, since the human family began, been persistently misunderstood and consequently badly handled.

Throughout the ages the literature reflects that at all times the cripple has enjoyed, to say the least, the underprivilege, varying from the short shift and the sudden demise of the Spartan days to the child of evil omen or the wicked dwarf of the fairy tales, but never has a deformed hero appeared. Elimination and ostracism from the scheme of social life has been his lot during the later generations, and even our Puritan fathers reckoned a deformed body as evidence of divine displeasure. There still lurks, in the minds of the superstitious and less informed, a sufficient amount of fear and ignorance to cause them to attempt to hide away their unfortunates, and many yet must actually be sought out, the fear of hospitals and surgeons overcome, confidence of the guardian secured, and the hope of the handicapped sustained.

At the onset, it is perhaps most pertinent to ask if it is worth while, from other than a humanitarian point of view, to interest ourselves in the damaged human. When the statistician's table of America's largest insurance company on "The Value of Man" assures us that a normal human being at the age of eighteen years, capable of earning $1,000 per year and 100 per cent employed, has a money value of slightly over $10,000, while the same person at the same age, with no capacity for earning is a social liability of nearly $10,000, it is easily understood that there is here a possible hiatus of $20,000 for each and every child. But, should this human become capable of being employed 50 per cent of his time or of earning $500 per year, he would be worth in actual money $65, a decided increase over the minus $10,000. To pursue this a bit further, this same human, same age, eighteen, and capable of doing work at the value of $1500 per year, and employed 50 per cent of his time, has a cash value of over $5,000.

Idaho has within her borders, by a consistent law of averages that holds true throughout ours and like countries, at least 2500 orthopedic cripples, of whom 1500 are under sixteen years of age.

A good definition, which helps to keep the subject clear of "who is a cripple," and applies for all ages, is "one whose activity is or, due to progressive disease, may become so far restricted by loss, defect or deformity of bones or muscles, as to reduce his capacity for education or self-support." Note here that no mention is made of that unfortunate, happily small, percentage of orthopedic cases with deficient mentality.

This same dependable law of averages reveals that at least 20 per cent of these are a complete loss economically, without reconstruction, reeducation in locomotion, provision for mental education, without vocational training and employment, and among the remaining 80 per cent there is required a greater or less proportion of each of these activities to prevent retrogression and to establish independence.

You may do your own mathematics, and it would be an enlightening assistance for calculation purposes to obtain from our state compensation board the rates and amount that is paid yearly for residual disabilities. The sum is actual millions, in coin of the realm, that may be reclaimed in our communities. This may seem a cold-blooded argument for such a subject, but such translates it into the only language that a politician can or possibly should understand.

The fundamental causes of dependency are conceded to be a state problem, as well as the appraising, as nearly as possible, its cost to society; and, furthermore, the state should seek out ways and means of preventing, as far as possible, their human charges from becoming social liabilities. These activities are not humanitarian but practical economy.

While thirty of our United States by legislation, appropriation or otherwise have recognized their re-

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* Read before the Thirty-fifth Annual Meeting of Idaho State Medical Association, Twin Falls, Ida., Aug. 30-31, 1927.

sponsibilities toward orthopedic as well as other types of defectives aside from isolated, spasmodic efforts by organizations, and a few cared for by charity or private endeavor, we of Idaho are content to allow this army of cripples to remain in status quo, or worse, have permitted them to drift to the hopeless maw of the charlatan and the quack. For many years even the general public has realized in an uncertain, indefinite way that there is a "cripple problem" and, appraised by current accounts of the marvels done by modern, scientific treatment in other sections, vaguely wonder why theirs or others of their acquaintances should be denied its benefits.

The chief reason for the neglect of the cripple has been until recent years the failure to realize that every need of a child's life, professional, economic and humanitarian, must be coordinated from the inception of the handicap. This calls for a highly complicated, cooperative service in the general fields of health, education and welfare; and today this may be accomplished with ridiculous ease, when those of any community, who care, determine it must be done. To realize as medical men our duty and limitations as concerns any plan that will attempt to bring the greatest good to the greatest number, a plan that will offer adequate care, cure, education and employment to all physically handicapped persons, it must be comprehended in its entirety and not only from an anatomic view.

The professional need is undoubtedly the first requisite, but included in this is much more than the indispensable orthopedic surgeon and the large orthopedic hospital with its highly specialized and expensive personnel and equipment. Equally requisite are convelescent and aftercare facilities at or as near the home as possible, the family physician, the welfare worker who allows no backsliding or lost efforts, public health officials, physiotherapists, trained teachers for special classes in public schools and for home and bedside teaching, occupational therapy and employment service. These are the important professional factors for complete reconstruction and all must be brought within the sphere of the child's activities.

The economic needs are great, and rare indeed is the family exchequer that could withstand the strain for one child, even were the facilities available, and as the whole structure is built on "chance, not charity," any hint of pauperism or institutionalism must be studiously avoided. Due consideration of finance, a highly technical problem, cannot be avoided. As other states through their state societies for crippled children have been successful in coordinating all agencies, funds are found for the preliminary stages. In the final solution, it is society that profits financially by this rehabilitation of humans, and in good time the state, through its department of public welfare, will assume its responsibility.

But it is in the humanitarian need that lies the great opportunity for the layman, in which the professional shares. For it is by his determination to offer all handicapped the chance to achieve independence and thereby happiness that has supplied the factor and the impulse which is bringing this concealed problem out into public view. Already, two great power groups, the Imperial Shrine and the Rotarians, have seen the possibilities of salvaging the hordes of physically damaged, and by their substance and efforts are arousing the public to be constituents for crippled children everywhere. The good that has been done by these and like organizations, as Kiwanians, Elks and other fraternal bodies, women's clubs, parent teachers associations and many others cannot be estimated, and from this cooperation, largely by the guidance of that experienced body, The International Society for Crippled Children, state societies that function effectively now exist in all the more progressive and advanced commonwealths.

It is they who, by their awakening of public conscience, educational propaganda, and local demonstrations, are gradually moving the legislative and administrative agencies of the various states into action. They are humanizing political machinery, as well as stimulating a lagging professional interest into real activity.

But in any plan, whether for a single patient or for the greatest good for the greatest number, the medical man occupies the keystone position, not only for the treatment and supervision of his charges from the inception of their lesions until they become independent, self-supporting adults, but his understanding of the amount and kind of institutional and convalescent care, the follow-up of muscle training and reeducation, these special provisions that must be made for mental education, to be followed by the type of vocational training suitable to the remaining deficiency, must be persistently told and retold to welfare workers, to teachers, to parents and to the public.

Indirectly, at least, the doctor controls the policy of the hospitals. More and more is the tendency to decentralize those offering adequate orthopedic treatment, so that for obvious reasons complete service may be obtained as near the home as possible. While there is no evidence that the large institutions in the thickly populated centers are lacking for material and thereby not justifying their existence, certain it is, as has been the repeated experience of all, remote from these, that getting the proverbial camel through the needle's eye could be but a shade more difficult than securing real orthopedic service by long-distance connections. The solution undoubtedly is that orthopedic departments must be added to all general hospitals in proportion to actual needs. See the child and not the institution.

The average days per patient, according to the Shriner's hospital reports, is ninety. When one reckons the comparative time taken by cases of tuberculosis of bones and joints, an idea of the fraction of the whole period of treatment spent in hospitals can be readily grasped.

Convalescent beds, at the ratio of 5 to 1 hospital beds, are more desirable for aftertreatment. These should be at the home when possible, or otherwise scattered at convenient points throughout the territory served. When the reconstructive and educational period is spent in or near the home, it eliminates the isolation factor and allows the supervision by the only one who can bridge the gap between service and the parents, the family physician. No less an authority than Sir Robert Jones has insisted that the convalescent home, properly supervised, is of first importance in the scheme of reconstruction of the cripple.

That the orthopedic branch of surgery is well established and highly specialized is beyond question, and under no circumstances should the final diagnosis, prognosis and treatment of any strictly orthopedic condition be relegated to any other than an orthopedist of recognized standing among his confreres. The outlined follow-up work, where trained aides are employed, may be safely supervised by any competent medical man who is at the same time responsible for as nearly an important factor, the general health regime.

Certain it is that in the past too many operations have been performed for deformities and paralysis, without due consideration of the time and stability and with little or no effort toward reeducation. The general surgeon, who knows his ability and limitations and is endowed with a conscience, needs no warning, and all others may be ignored.

Nor are all the strides made since prewar days, in orthopedic and reconstructive surgery, limited to surgery alone. Much has been accomplished in a preventative way by the strictly medical man and his medical propaganda, particularly in eliminating rickets and the corralling of tuberculosis, two of the great feeders of orthopedic hospitals. The general early reporting of congenital deformities has made these susceptible of enormously better results. May the day soon come when all states require, as does Wisconsin, a birth certificate report of all recognized congenital defects and deformities.

The imperative dictum to all the medical fraternity of getting the child early, thus never allowing the preventable deformities to occur, is being heeded. Thus many of the horrible conditions of former days are seldom seen, and many more are being restored to near normal in weeks that formerly required continuous treatment for years with lessened net results.

That little has been accomplished in a preventive way with that captain of diseases for crippling, poliomyelitis, need not discourage. As nearly all scourges have either been tamed or eliminated almost within the recollections of our oldest colleagues, so will this elusive, subtle fiend of seeming satanic delight, which leaves its victims alive to parade its deeds throughout life, surely be subdued by these same medical scientists.

No doubt this effort to state the cause of the cripple and even to superficially hint a remedy has been inadequate, but with some years intimate contact with children and isolated cripples, it has long been apparent that something more than private effort is demanded, something more than the shipping of an occasional indigent child to a distant hospital for operation, something more than the well-intentioned, local clinic without a scientific follow-up, whereby the great majority of those who are brought are doomed to settle back more deeply into the slough of despond.

Certainly Idaho has never been accused of being niggardly toward her children or dependents. No cause worth espousing has ever lacked brains or loyalty among her citizens. Then, when one views the number of organizations in every community, with no apparent excuse for existing, is it too much to expect that by the proper initiative, guidance and cooperation, a real one with a real object, a state society for crippled children, might not form and function. As the "cripple in Idaho" differs not at all from his brethren elsewhere, except in the incidence of distribution, the essentials remain the same, with only the ways and means to be modified.

GENERAL PRACTICE OF MEDICINE

A SYSTEMATIC REVIEW OF SEVEN YEARS

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ASTORIA, ORE.

Having just completed seven years of unopposed medical practice in the small town of Westport, Ore., and having bid farewell to the place, it might be interesting to note the frequency with which the various pathologic lesions were met. In other words, the review is a fair sample of the life of a country practitioner. I had little or no opposition in this field. Many dental problems are herewith included, as no dentist was there. The abdomen was not opened, but taken to the nearest hospital and surgeon which was thirty miles distant, assistance being given in these cases. The practice was half of an industrial nature, viz., sawmills, logging camps and longshoremen, the balance being fishermen and farmers.

The review is taken up systematically after an outline of diagnosis which I had drawn up and memorized to meet the many problems and emergencies which arose out of such a practice. With this are interspersed a few case histories and comments which may be taken for what they are worth.

CONGENITAL ANOMALIES

Misplaced cell rests. This condition was not frequent and occurred mostly in the mouth. Impacted wisdom teeth gave rise to pain in about fifty cases. Half of these were referred for extraction and about one-third were cured by treating the gums locally and giving salicylates for pain. Opiates were seldom required. Quite a number of the impossible looking wisdom teeth slid by in a few weeks time, these being sound and serviceable teeth afterwards. Buried canine was seen but once and found by x-ray. This case produced pain in bridgework overhead. A dentigerous cyst was seen once and this in the lower jaw. Accessory thyroids were seen four times and lost trace of. A supernumerary mammary gland was found once, this in the axilla of a young woman which gave pressure pain. The growth was removed under local anesthesia and a section made later which confirmed the diagnosis. The other misplaced cell rests, such as teratomas, dermoid cysts of the ovary, etc., for which medical instruction at the medical school was so explicitly given, were not seen at all in my practice.

Dentigerous cyst. A carpenter of 35 was struck on the lower jaw with a board. A few days later he complained of a severe pain. A radiogram showed a cystic cavity in the lower jaw underneath a bridge, between the first and third molars. A dentist was seen but he would not handle the case. As the man was almost delirious with pain, a general anesthetic was given, the cavity opened with a quarter-inch drill and curretted. Pus was found and a small portion of a dentine substance removed. On awakening, the man was completely relieved of pain, much gratified over the small operation.

Incomplete fusion. These were quite rare and consisted of four or five cases of harelip, three of which were combined with cleft palate. These were all adults and had either been operated upon or could not be persuaded to undergo further operation for their deformities. There were also seen two cases of incomplete fusion in obstetric practice, both of whom died. One case is interesting. A baby was born with its heart protruding from its chest and without a pericardium. The heart beat regularly and looked like a big acorn. Not knowing what to do with this, the heart was sewed in with a flap operation, the baby dying six hours later. The other forms of incomplete fusion, such as spina bifuda, etc., were not seen in my practice.

Undescended viscera. These cases were practically all undescended testicles and found at birth in children, with a few in adults. Perhaps twenty cases were seen, only one of which became surgical and this in an adult complicated by a hernia and a hydrocele. A good result was obtained from the hernia and hydrocele operation, but only a fair result in bringing the testicle down into the scrotum. Undescended or incomplete rotation of the viscera was not seen or diagnosed in this limited field of abdominal surgery.

Vestigial remains. These cases were extremely rare. I had only one case which gave the clinical symptoms of a diverticulitis, characterized by the passing of an occasional enterolith, slime and a little blood. The patient is still well. There were also six cases of blue babies, all of whom lived. The other conditions, such as Meckle's diverticulum, thyroglossal cyst, horse-shoe kidney, bicornuate uterus were never seen or diagnosed.

CIRCULATORY

Myocarditis and endocarditis. The involvement of the myocardium in the various illnesses of the aged is so frequent that a fair estimate cannot be given here. Perhaps from one-fourth to one-fifth of elderly people have either a myocarditis or endocarditis when chronically ill. The most frequent lesion was mitral regurgitation and, as Richard C. Cabot has recently brought to light in his book, "Facts on the Heart," mitral regurgitation should be called mitral stenosis, as he has shown that stenosis exists in practically all the cases of mitral regurgitation. Endocarditis followed rheumatic fever in eight cases. Endocarditis followed whooping cough in one case.

Hypertension. Fairly frequent after forty. Seventy-five cases were seen, only one of these being in the thirties. He had a systolic pressure of 240. Nitrites did not lower his blood pressure. Readings were taken daily as he went to work. He was accidentally killed longshoring.

Hemorrhage. Very frequent in private practice. Perhaps 2,000 cases in its various forms. Most of these are met in minor accidents and injuries. Only about ten required the use of the tourniquet, and that mostly for the loss of an arm or leg. Pressure applied with gauze and bandage stopped the bleeding in most of the cases. Perhaps 140 to 150 of this number required either suturing or tieing to control the bleeding.

Hemorrhage of the nostrils is most severe in the aged, but occasionally severe in young adults. Plugging the nostril with cotton saturated with peroxide and later searing the part with an electric cautery was efficacious. Ten such cases were seen that might have been serious, and perhaps fifty milder cases of nose bleed. Hemophilia was seen only twice. Ectopic pregnancy with internal hemorrhage was seen twice. Both of these were opperated upon and made a good recovery. Hemorrhage from miscarriage always occurs, there being perhaps 150 cases, none of which were fatal, only four or five remained in a state of collapse for a week or more. One case of abdominal hemorrhage was fatal from a 22 caliber rifle bullet.

Varicosities. Quite frequent, and mostly in the form of varicose veins of the legs, piles and an occasional varicocele. There were perhaps sixty cases of each varicose veins and hemorrhoids. Varicocele was present in ten cases. Varicose veins of the esophagus and other parts of the body were not seen. None died of these ailments.

Aneurism. There were only two or three cases of aneurism of the aorta, none fatal.

Phlebitis. This followed childbirth in two cases. One followed a childbirth conducted by a midwife which was fatal; the other recovered. Phlebitis was seen once in the left arm of an adult. The cause of this was never determined.

Gangrene. Very rare. Only one case of diabetic gangrene was seen and that in the foot of a lady who subsequenly died. Gangrene of the bowels or other parts of the body was not seen.

Thrombosis and embolism. These were mostly in the aged, accompanying the so-called apoplectic stroke. Perhaps twelve such cases were seen, of whom six died. These were not confirmed by autopsy findings and only on clinical grounds by the accompanying paralysis. How often thrombosis and embolism occurred in the symptoms attributed to rheumatism was hard to conjecture. This fact may never be settled by pathologic findings. It is quite possible that such does happen often from placques of sclerosis, endocarditis or metabolic infection, not easily recognized.

Blood. One case of lymphatic leukemia in a young girl which was fatal.

MECHANICAL FACTORS

Obstruction. This can occur any place within a hollow viscus, being quite varied for discussion. Obstruction by a large prostate happened five times. Two were operated on elsewhere. Two recovered after a short catheter period, and one was relieved by treatment. Obstruction of the bowels did not occur in cases that were serious, neither was there ever an operation required for this purpose. I made a diagnosis of an intussusception once in a child, but he was killed in an auto accident en route to the hospital. Postmortem was refused.

Retention. This is practically the same as the above. Retention of urine was most frequent after childbirth. This happened four or five times in about 250 deliveries. It also occurred once after removing piles.

Stricture. The most frequent stricture was of the penis and occurred twenty times. Stricture of the esophagus, ureter, rectum or bile ducts did not occur so that surgical interference was necessary. Four or five strictures of the penis were referred to specialists, the others recovering after a period of treatment with sounds.

Adhesions. Adhesions were quite frequent in the abdomen, that is, clinically so, two or three requiring an operation for this condition. Many adhesions were found in the course of other abdominal operations. Adhesions following injuries to tendons were seen fifty times, passive motion being used to break them up. In this connection I wish to say that the electric vibrator, placed above the adhesion of a finger or toe, is excellent in stopping the pain when using strong passive motion for correcting the deformity.

Malposition. This was observed chiefly with the stomach and floating kidney. Six of each were noted. No operations. Malposition of bones was always studied, especially in radiographs, the angles and relative positions being noted. No fair estimate can be given of these cases, but they were frequent.

Hernia. This was frequent on the outside and rare on the inside. Perhaps fifty or more hernias were noted, most of which came to operation. A hernia of the bowel, diaphragm or other internal organs was not seen.

Fractures. These were frequent. Fracture of the ribs was encountered in about 250 cases, of hands and feet 200, of the arm 60 and of the leg 40, of the nose 20, of the skull 5, of the hip 2, of the jaw bone none. In fracture of the metatarsal bones I found the simplest treatment was the best. An arch support placed under the foot with a figure of eight bandage around the ankle was the most satisfactory. This method reduced the period of convalescence from one-third to one-half of the usual time required when a plaster cast was used around the foot and ankle. The bone or bones seemed to step in place by this method and the ankle was never stiff afterwards.

Dislocations. These were only about one-twentieth as frequent as fractures, that is, speaking numerically for the whole group. In regard to the hip joint, dislocation was more frequent than fractures. Of the fingers and toes there were 25 cases, of the shoulder 8, of the hip 4, of the spine 2 or 3, of the elbow joint none. In reduction of the hip joint it is essential to have the patient under an anesthetic and on something solid. Reduction according to text-book descriptions of technic was not difficult but rather spectacular in giving a good snap when the head of the femur sprang in place. I had difficulty in one case, in which I had forgotten for a moment to put the patient on the floor. I tried it once on a bed but found that this would not work.

FOREIGN BODIES

Splinters, glass, steel, etc. Splinters were very frequent, perhaps 2,000 cases. The usual method was to inject a local anesthetic into the opening made by the splinter, then to open the wound slightly until the splinter could be seen and removed with forceps. A splinter has to be seen before it can be removed, there being but few exceptions to this rule. The smaller the sliver, the harder it was to remove. A sliver should be felt by the operator or other positive evidence at hand before attempting to remove it. Glass was usually the result of a drunken bout or auto accident. It was easily seen with the fluoroscope. Steel in the leg was hard to remove. I had six cases of the latter and used the fluoroscope on all of them. No matter how careful a physician is, a foreign body will be overlooked occasionally and found by someone else.

Calculi. These were quite frequent. I had on my list twelve urinary calculi patients. None of these came to operation in seven years of time. I had them take alkalies either of soda or tribasic citrocarbonate twice a day between meals two days a week for a period of six months. I did this empirically on the basis that most stones were acid in concretion. I cannot say this was a cure, but the patients all got along nicely. Calculi of the gallbladder were treated in the same way, and about the same number of people were affected. None of these have come to operation. Three times the gallstones were found in the stools by carefully washing them through a screen for a period of one week following the gallbladder colic.

Pregnancy. This is listed as a foreign body for a matter of convenience. About 250 deliveries were effected. Five of these were with instruments, and four by cesarean operation. Two cesarians were for eclamptic convulsions, one for placenta previa and one for exhaustion of labor pains, in which the cervix would not dilate. Pituitrin was used in about one-third of all the confinements in the last stage of labor. In six cases pituitrin was used, one-half c.c. every half hour until effective to induce labor in cases overdue. A baby was born dead by the use of instruments once. One died as the result of using morphine and hyoscine, and one through a knot in the cord which tightened during the process of delivery.

Retained tissue. Portions of the afterbirth remained after delivery on two occasions and had to be removed with a gloved hand and finger in the uterus. In one case also they were used to peel the placenta from the uterus. There was not a single mortality to the mother in obstetric practice, including cesarian sections, instruments or through the use of pituitrin.

INFECTIONS

Acute respiratory. This was most frequent and seldom serious. The ordinary cold, with and without fever, was seen perhaps six thousand times. A text-book picture of pneumonia never developed once. There were, however, about twenty cases of a pseudolobular pneumonia, in which it was said the patient had a touch of penumonia. The more severe of these had a pleuropneumonia, two of which required rib resection for empyema following. There were five hundred tonsillitis cases and fifty of peritonsillar abscesses, most of which were lanced. Frontal sinusitis numbered fifteen and maxillary sinusitis ten. The sinus cases recovered under the use of salicylates, none requiring surgery. Summing up the whole list of respiratory infections, there was not a fatal case in seven years, which is remarkable.

Acute abdominal. These were frequent as to appendicitis, in all amounting to 150 cases, of which 125 were operated upon. Of this number twenty were ruptured and drain cases. Of the whole series there was but one fatality. There were three cases of ruptured gastric ulcer. All were operated upon and one was fatal. There were no acute gallbladders. There were cases in which there was acute pain over the gallbladder region, twelve or more having fever, but these recovered with hot pack treatments and rest in bed.

Acute cerebrospinal. Only one case of sporadic cerebrospinal meningitis in a young man working at a mill. The spinal fluid showed diplococci. He made a good recovery. Infantile paralysis or other lesions of the spine and cord were not seen.

Acute local and focal. Most numerous of these were infected fingers, of which 350 cases were seen. Hot pack treatments and incision were employed when pus formed. None were fatal. Of this number five had tendon sheath infection which required multiple lancing points. Of erysipelas there were ten cases, one of which developed orbital cellulitis.

There was only one case of tetanus, due to a gunshot wound of the arm. The shot and wadding were removed and all seemed well until the tenth day, when, due to spasm of the jaw muscles, the patient accidentally bit the thermometer into pieces. Intraspinal and intramuscular injections of serum up to 50,000 units were then given without relief. As this was the only case of tetanus, it seems likely that the germ came from the wadding and load of shot. It surely did not come from splinters or soil, as there were thousands of cases of exposure from splinters without a single case of tetanus from this cause. Focal infection in the teeth with abscess in the jaw was quite common, perhaps a hundred cases, none being fatal.

Acute systemic. These were rare as to streptococcus, septicemia or staphylococcus. Of pyema, I never had a case. More recently, and not included in the seven year period, I had two cases, one following septic abortion with abscess in the leg who died, and another from a fractured toe with a metabolic infection in the jaw and hip. After a period of three weeks the jaw was opened and drained. One week later the hip was opened and there was still no pus until a few days later. This patient recovered in eight weeks time. Both cases showed streptococcus from the blood culture.

Chronic. Typhoid fever presented forty cases, ten of which were sent to the hospital, and one died. When you have a fever of over one week's duration, with physical findings negative and no history of tuberculosis, you have typhoid fever. I found this home-made rule more positive and reliable than the Widal test. This test on the whole is quite unreliable. Two cases will illustrate.

A school teacher had a fever for twelve days, when 10 c.c. of blood was taken and 5 c.c. put into two sterile containers simultaneously. One was sent to State Board of Washington and the other to Oregon State Board of Health. Oregon reported negative and Washington positive for typhoid fever. The patient ran a typical typhoid course with rose spots, foul smelling stools, etc.

The other case was a girl of sixteen with a fever of two weeks duration. Specimen of blood was sent to Oregon State Board of Health and reported positive for typhoid. Thereupon I put a sign "typhoid fever" on the house and isolated the patient. A few weeks later she grew worse. There was a mass in the abdomen. She was taken to the hospital and operated upon. There was found intestinal tuberculosis with an abscessed condition of the mesenteric glands. Had I depended upon my rule, I would not have made this mistake, as her mother was under treatment for tuberculosis at the time.

On the whole I would put little reliance on the Widal test. This may have been due to the fact that the blood had to be sent through the mail for a diagnosis.

Tuberculosis. I had fifteen cases of pulmonary tuberculosis with six deaths. Tuberculosis of the kidney, none; of the testicle one case. The testicle was removed and the boy made a good recovery. There was one fatal case of tuberculosis of the spine. Other forms of tuberculosis were not met with.

Syphilis. Perhaps a hundred cases. Treatment was effective in practically all the early cases. The secondary and tertiary ran a variable course. Some got well in spite of lack of treatment; some that refused treatment got well and a few landed in the insane asylum. I believe that intermittent treatment over long periods is on the whole more satisfactory than intensive treatment in tertiary syphilis.

Gonorrhea. These numbered about one hundred cases. Of the chronic type six developed gonorrheal rheumatism; others presented epidydimitis who about that time took the train to a large city. None were fatal.

Focal of teeth, tonsils, sinuses, etc. Chronic focal infection cases of the teeth were too numerous to mention. It would seem that dentists should either perfect a root canal filling that would not abscess or quit devitalizing teeth altogether. Very few teeth abscess of their own accord. In fact, I saw only one such case. Chronic infection of the tonsils is frequent; of the sinuses rather rare as to disability from this cause.

EPIDEMIC

Smallpox. I had twenty cases, of which none was fatal. This was the hardest of all diseases to diagnose in my opinion. Most of them were isolated and unexpected. Very few ran a typical textbook description in the earlier stages, but surely were typical when broken out. One case will illustrate.

A jitney driver of twenty took ill with fever of 102° and 103°, characterized by sweating and headache. He was diagnosed as influenza. After three days his temperature was normal. I kept him inside for three days more and let him go to work. After working one day he started to break out with smallpox. The pustules were so thick that you could not place a quarter on his body without covering a pustule. In practically all text-books mention is made of the fever dropping when the eruption appears. Here is a case in which the fever dropped and stayed normal for four days before pustules broke out. I do not know if this is mentioned in the texts. This patient had previously been vaccinated but there was no reaction at the time.

Chickenpox. This was frequent, numbering fifty cases, none being fatal.

Scarlet fever. These frequent cases ran more in groups and numbered seventy-five, most of which were easy to diagnose from the characteristic reddened throat and later the rash. Those in which the rash does not break out offer difficulty. One family in which I let the children go to school, as there was no rash, had to be taken back later when their bodies began to peel.

Measles. Here were perhaps a hundred cases, none fatal.

Whooping cough. These, numbering perhaps two hundred cases, ran in epidemics. Diagnosis was only possible from continued cough of over one week's duration, and characterized with paroxysms. None were fatal. One case developed endocarditis with a mitral regurgitation, following the whooping cough.

Diphtheria. These came more or less unsuspectedly, dropping out of a clear sky occasionally. There were twenty-five cases, one being fatal from edema of the glottis.

PARASITES

Protozoan. Of these malaria was the rarest of all. I looked for it a hundred and fifty times with the microscope and never found it once. Several from the South said they had it, but I could never confirm it and they all recovered without quinine treatment. I believe they should send some of our mosquitoes to the South, as they seem immune to malaria here.

Pin worms. Were not many, numbering ten cases.

Scabies. This was the most frequent of parasites, appearing in over three hundred cases mostly in young children and a scattering few in adults. Compound sulphur ointment treatment was effective in all cases.

DRUGS, POISONS AND FOREIGN PROTEINS

Drugs. About fifty morphine addicts were seen, mostly longshoremen and a few shingle weavers. I seldom helped any of these out but did fall for a few of their hard luck stories at first. They were the best liars on earth.

Poisons. The most frequent was hemlock poisoning. A workman gets this from handling lumber in the mills. There were a hundred cases, none fatal. Acetanilid poisoning and argyria were not seen. There was one case of carbon monoxide poisoning who recovered.

Bee stings. Fifty cases were presented for treatment. Two were nearly fatal. One girl was stung in the back of the neck. Within ten minutes her features were unrecognizable, due to the generalized edema of the body and face. Her pulse could not be felt. She was given citrocarbonate immediately in solution, as much as she could swallow. Later soda injections per rectum on the theory to alkalinize her body fluids. She recovered and was normal in every way eight hours afterwards. Another case was treated likewise with the same results. Adrenalin was not tried in these severe toxic cases.

Moonshine. These cases were too frequent to mention. Two deaths.

Foreign proteins. Were frequent as to hives, perhaps 150 cases. Asthma twenty cases, hay fever twenty cases. They were more or less difficult to treat.

TUMORS

Carcinoma. There were five cases, three of the uterus and two of the stomach. In the cervix carcinoma was hard to recognize in spite of all that has been said about it. All were fatal.

Sarcoma. None.

Fibroma. Five cases appeared of fibroma of the uterus. None would have an operation. They still live.

Ovarian cysts. This was rare, there being but one case, an elderly lady. She still has it about 10 cm. in diameter.

Sebaceous cysts. These were common, numbering fifty cases, all removed.

Fat tumors. These numbered twenty. Two or three were removed and the rest refused operation, when they learned there was no danger of cancer.

Chorionepithelioma. None. There was one case, in which grape-like cysts were removed by currettement, with no signs of malignancy.

DEGENERATIONS

Ulcers. Ulcers of the stomach numbered seventy-five clinical cases. Three of these had perforated ulcers. The latter were all operated upon. Two recovered and one was fatal. Of varicose ulcers of the leg there were twenty. These were hard to treat satisfactorily in private practice. All wanted to work while undergoing treatment. There were eight syphilitic ulcers of the leg, and one of the arm following a nail wound. These responded well to treatment. There is another form of leg ulcer which is neither syphilitic nor varicose, usually in school children. I had five of these. Treatment was effective but slow as to healing. The other forms of degeneration, such as hyalin, colloid, fatty, sclerosis and fibrosis, are fairly well mixed up with other clinical subdivisions of diseases and can not be reviewed here.

METABOLIC DISTURBANCES

Diabetes. Was rather rare. In all six cases. These were mentioned eleswhere. This is infrequent for such a large territory. Imagine finding only one diabetic a year, doing perhaps four to six urinalyses a day throughout the year. In fact, it became disgusting to boil the urine each time to find if there were any diabetics in the country.

Goiter. Numbered fifteen cases. Five were operated upon by outside surgeons. The other diseases of metabolism were not encountered.

SUMMARY

The above is an approximate account of seven years of a general practice. There have been many omissions, as one will readily see, but this outline was practical for one alone and shouldering the responsibilities of a country practice without laboratory facilities. In any given case, if the outline failed to give a clew to the pathology presented, another angle was used in trying to picture what tissue was envolved, whether skin, fascia, muscle, nerve, periosteum, bone, blood or lymph; what organ, sinus or cavity was envolved and how many of each. I trust this summary and these remarks may aid some other practitioner in his mission to the sick and wounded.

IMPORTANCE OF RECTAL EXAMINATION *

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We are here principally to enjoy and benefit from the more technical and elaborate papers and discussions of major subjects presented by our big brothers from the larger centers of population and opportunity, who have so kindly consented to visit us and contribute to our program. However, it may not detract from but rather intensify our appreciation of these, to throw in between one or two short papers or brief talks on some of the more homely or less attractive subjects which frequently require the attention of the general practitioner. Therefore, I have chosen to present a few remarks or suggestions on the importance of rectal examination, not with the expectation of thrilling you with something new, wonderful or technically brilliant, but rather, perhaps, to resurrect from the storehouse of your memory some important facts which you have known but possibly somewhat carelessly have come to underestimate or entirely neglect.

Apparently the subject of proctology has been woefully neglected, not only in most of our medical college training, but in our current literature and society discussions. At the splendid meeting of the Pacific Northwest Medical Association recently held at Boise, not one of the thirty-six excellent papers and addresses contained the slightest allusion to any phase of the subject. Thus it is always. Our own lack of interest is mostly to blame for this situation, and, according to our demands, sometimes we are provided with an entire menu so ultrascientific that it largely goes over our heads.

A couple of years ago, while attending Dr. Louis Buies' rectal clinic at Rochester, I was impressed with the fact that, notwithstanding the exceptional opportunity every day to observe and study from fifteen to twenty-five interesting rectal cases of all types presented for examination and diagnosis, out of the very large number of physicians visiting the other clinics only a comparatively few visited *this* clinic, still fewer remained over an hour and practically none was seen a second time. This was a very fair demonstration of the degree of interest taken in proctology by the average practitioner.

We all recognize the fact that the most important and usually the most difficult duty of the physician or surgeon is to arrive at a correct diagnosis of his case, or to properly recognize and identify the various pathologic conditions, organic or functional, and classify as to their primary, secondary or contributory relationship to the complex of symptoms which we are called upon to correct or alleviate. Consequently we depart from the obsolete custom of forming our conclusions from subjective symptoms largely, or accepting the ready made diagnosis of the patient.

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* Read before the Thirty-fifth Annual Meeting of Idaho State Medical Association, Twin Falls, Ida., Aug. 30-31, 1927.

It is now customary, in all but the simplest cases, to subject the prospect, or prospect the subject if you prefer, to a very thorough clinical or physical examination, supplemented by such laboratory tests and findings as may seem necessary to afford us as reliable a conception as possible of our patient's actual condition. This makes it possible to render an intelligent opinion, and wisely advise the subject of investigation as to the proper treatment to pursue.

In the course of this examination, after some questioning relative to personal and family history, etc., and listening to subjective symptoms related by the patient, which frequently lead us as far as possible from the real focus or cause of trouble, we proceed to investigate for ourselves. We inspect, we palpate, we percuss and auscultate from top of the head to soles of the feet. We note temperature, character of circulation, respiration and various reflexes. We make urinalysis, blood examination, metabolism test; syphon stomach and tickle the gallbladder. We examine the eyes, ears, nose and throat and x-ray everything else, with probably a final decision to "look into" the abdominal and pelvic cavities.

But out of respect for the delicate sensibilities of our patient, we carefully avoid any direct reference to the rectum or anus, and our patient, especially if a lady of culture and refinement, would not volunteer information regarding so vulgar a subject for the world, such is the traditional antipathy against mentioning or discussing this greatly abused and neglected part of our anatomy. Many a high born lady will without the least hesitation or timidity consult her physician regarding real or imaginary disorders of her "female organs," who would blush with humiliation to admit that she suffered from some rectal or anal disorder and desired an examination of the same. Instead, she has gone on, for years possibly, suffering in silence and being treated for everything else, simply because her physician was not sufficiently inquisitive or tactful to suggest and secure a proper and real examination of the anus, rectum and sigmoid.

I realize that the situation is sometimes rather embarrassing, and, lacking proper equipment and facilities, the general practitioner sometimes finds the task distasteful and unsatisfactory. I am afraid many of us have drifted into the habit of accepting statements of patients and taking much for granted, so far as the terminal station is concerned, except in unusually aggravated or painful cases, and then probably limiting the examination to a casual inspection or digital exploration which, while affording valuable information, are alone inadequate in most instances.

I do not mean to suggest that every patient who seeks your advice should be subjected to a rectal or proctoscopic examination, but I will say that any such examination made on suspicion, yet showing only a normal canal, if properly executed, will not be to disadvantage of the patient, and will have added somewhat to your knowledge and ability to recognize a normal condition of the perianal area, anal canal, rectal and sigmoid interiors when you see them. So, for the benefit of your patients in general and yourself in particular, I cannot too strongly recommend the routine practice of at least putting your rectal examinations on a par of interest and thoroughness with that of any other organ of the human anatomy.

If you faithfully pursue this course you will be rewarded with many surprises, and be enabled to direct your treatment to an entirely unsuspected source of trouble, which may be either painful but not serious or serious but not painful or both, which, if not the primary cause of the patient's discomfort or general ill health, is at least a contributory factor which will seriously impede or quite prevent recovery unless recognized and corrected. You may discover early phases of pathologic conditions in time not only to alleviate but effect a cure in cases that otherwise would slowly but surely drift along to malignancy or at least to become physical and nervous wrecks, due, it may be, to nothing more serious primarily than a simple fissure or painful ulcer which could have been cured in a few days if recognized and properly treated.

You will learn that the layman's "piles" may mean anything from a perianal pimple to an ischiorectal abscess or carcinoma of rectum or sigmoid; that often the ailments of which the patient complains most bitterly, and for which he comes to you voluntarily seeking relief, are really not serious in themselves, but may be readily corrected after correct diagnosis has been made following a real examination. On the other hand, a malignant neoplasm may present few subjective symptoms other than blood in stools, and if we make a snapshot diagnosis of "bleeding piles" without having seen them, we may later on be subjected to bitter reflection and humiliation, when too late the real trouble becomes self evident, or some other fellow discovers the fact that the patient is suffering with advanced carcinoma of rectum or sigmoid, and the day of opportunity or hope has long since passed.

Not only should every patient with history of pain, swelling, protrusion, itching or bleeding of or from the anal or rectal region be subjected to a thorough examination, but all cases of backache, lumbago, sciatica, bladder or prostatic irritation in the male and the various pelvic derangements of the female, as well as certain nervous conditions and anemias may be suspected as secondary to some anal or rectal pathology. The discovery of a painful ulcer, fissure, cryptitis, papillitis, etc., which had not been suspected or recognized, may often lead to its prompt cure and the rapid disappearance of reflex nervous and functional disturbances that have baffled the physician for months.

Most of the objections to a practical examination of the rectum on the part of the patient are fancied and may be overcome by tactful explanation of its necessity by the physician. For neglect or failure on part of the physician there is no excuse except that of indolence, superfastidiousness or indifference for the welfare of the patient. The lack of equipment or facilities should not excuse one, for such as are sufficient for all necessity may be added to any ordinary modern office equipment without any great expense, compared to the benefits to be derived therefrom. While a Buie or Allison-Haines specialist's table is a great convenience, it is by no means necessary, and the ordinary examination table may serve very well.

If not already in your possession, make a judicious selection of practical modern specula and other necessary instruments, not too complicated nor yet dating back to the inquisition as instruments of torture. Your most valuable aid will be your educated fôrefinger, protected by a light rubber cot and suitably lubricated, trained to gently palpate the anal canal in search of abnormal irregularities of surface or unnnaturally sensitive areas, to test resistance or spasticity of sphincters, etc.

In addition to this, one should have due consideration for feelings and comfort of his patient, in providing such screens and drapes as will reduce exposure to a minimum. Above all, apply to the utmost the art of gentleness in touch and in manipulation of speculum and instruments, for the bravest knight is fearful of what he cannot see, and apprehensive of the Satan behind him. Your tactfulness and gentleness at this first examination will probably decide your future professional relationship with the patient, and a favorable impression made at this time, with successful management and treatment following, will insure the appreciation and gratitude of a patient, to which none other may be compared.

With limited time and space it is quite beyond the scope of my intention to wander into a discussion of diagnosis, treatment or even details of procedure, with which doubtless you are either familiar or may refresh your memory by reference to any one of several very complete and up to date works on proctology, such as those by Pennington, Gaunt, Hill, Montague, etc. My sole purpose is to stimulate more interest in the subject on the part of the general practitioner and suggest to you the thought that not only is the examination of a rectal case incomplete without a general physical examination, but that no general physical is complete without a rectal examination.

DRUG STORE DERMATITIS

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The above title was chosen for the sake of brevity. While it indicates the chief source of the trouble, it may be extended to include others as well, as will be indicated below.

The condition known as dermatitis venenata is familiar to dermatologists, but it is not as widely recognized as it should be. The name indicates an inflammation of the skin, caused by chemical agencies acting upon it from without. In a large majority of instances the specific cause of the trouble is not recognized by the patient. When he seeks medical advice he may be told he has eczema, and the cause not being recognized and hence likely to continue to produce its effects, the treatment is often unavailing, when it does not actually aggravate. Probably the causes most commonly recognized are the well-known poisonous plants of the rhus and primula families, and the dye used in coloring brown and black furs, paraphenylendiamin.

The agencies to be considered in this paper, however, are drugs used for external remedial or cos-

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* Walker, Sir Norman: An Introduction to Dermatology, Ed. 8, Edinburgh, W. Green & Son, Ltd., 155, 1925.

metic purposes, recommended by persons unauthorized to do so. The frequency with which these produce undesirable results, as shown in a recent series of cases of dermatitis venenata in private practice, is striking and informative.

In the majority of instances a person with some skin eruption has gone into a drug store and consulted the man behind the counter. When the trouble happens to be impetigo or scabies, the diagnosis is correctly made in the greater proportion of cases. A jar of ammoniated mercury ointment in the former, or of sulphur ointment in the latter (sometimes a well-known proprietary specific) is handed out. Directions for use are given succinctly, "rub it on."

If after one or two applications the condition is unimproved or worse, the patient, going on the principle, "if a little is good, more is better," increases the quantity and the frequency of applications. The outcome is a mercurial or sulphur dermatitis.

But the druggist is not always the offender. Barbers and beauty parlor attendants have learned of the magical virtues of mercury, and in my experience frequently advise their patients to make use of ammoniated mercury ointment, on some occasions even specifying that 10 per cent strength is to be used, bichloride soap, etc. A recent patient of mine, with a painful and extensive dermatitis of the face and neck, told me that a barber in one of the largest shops of this city had been giving him hot packs ("hot towels") of bichloride solution for a week or more, and had at the same time directed him to use ammoniated mercury ointment and bichloride soap as well.

In the case of scabies the next-door neighbor in a backyard-fence consultation counsels economy, attained by making up one's own sulphur ointment. "Just you take equal parts of sulphur and lard, Mrs. Jones, and mix them, and then take a bath and rub it on *good* every night," is the usual prescription.

Another recent patient of mine, a student in pharmacy, told me that in treating scabies on himself he had improved (*sic*) on this by putting into olive oil all the sulphur it would hold and applied it to the face as well. The resulting conflagration should have taught him more than many lectures. The fact that many skins do survive such treatment without severe discomfort, even when they cover the bodies of small children, is proven by its perennial popularity, and justifies the classification of *genus homo* among the pachyderms.

All of us are alive to the possibility of idiosyncrasy toward most of the drugs of the pharmacopeia, used internally or externally, are aware of the danger of overuse of such remedies as arsenic, thyroid, etc., and from time to time we make our mistakes. This matter does not come strictly under the heading of the subject now being dealt with, but it is so closely related to it that it will not come amiss to touch upon it parenthetically. It is so widely believed that ammoniated mercury and sulphur are practically specifics in impetigo and scabies respectively that sufficiently exact directions are not always given to the patient when ordering them, nor is the patient always sufficiently warned about what may be expected or what to guard against.

First, ammoniated mercury is very often quite ineffective in impetigo, and, second, the commonly prescribed strength of 5 per cent, even in the absence of an idiosyncrasy in the patient to mercury, is often too strong. As Sir Norman Walker* points out, the mistake is often made of using too strong an ointment. Finally, if the results are not satisfactory in a short time, the patient must not be allowed to go on using the ointment without supervision, and if they are good, the patient must be warned against resorting to an indiscriminate and unlimited use of the ointment again for any kind of skin affection that turns up in the future. Patients do this very frequently, and this can easily be guarded against by simply marking such prescriptions "non repetatur."

In the case of using sulphur for scabies, specific directions and warnings are also necessary. The complete change of underwear, hose, night-clothes, bed-linen before the initial bath is important. The initial bath not to be repeated for a week is also important, and the strict injunction to discontinue the use of the ointment after the fourth night is most important. Unless this last is done, and the patient warned that the itching, which usually becomes greatly dimnished if it does not disappear entirely after the second night, may reappear towards the end of the week, and due this time not to the itch-mite but to the sulphur, probably he will continue to use more and more sulphur until he produces an intense and generalized sulphur dermatitis, "and the last state of this man shall be worse than the first."

The Danish "one-night" treatment, now put out as a proprietary, is frequently handed over the counter by the druggist and commonly prescribed by the physician. It does not always produce a cure, either in one or several nights, and it is not unsual to find that it has been used by a patient for as much as a week, sometimes after a dermatitis has already been produced by ordinary sulphur ointment.

It is ignorance, plus presumption on the part of the druggist, the barber and the beauty-parlor attendant, that causes most of the trouble. It is inexcusable and should be checked. Druggists who make a practice of diagnosing diseases and prescribing treatment should be denied the support of the medical profession. Such people lie under the same indictment as other irregular practitioners; they are practising medicine without a license, and it is well known that dermatology is not the only department of medicine which they invade. The officious neighbor does the same thing, but his motive is disinterested, and attempts to check the activities of the neighborhood grannies would quickly lead to absurdities.

In a recent series of seventy consecutive cases of dermatitis venenata occurring in private practice, there were twelve from the use of sulphur in scabies and seven from the use of mercury in various forms for impetigo and other dermatoses. A large number of cases, including impetigo, where mercury and other local applications had been used without beneficial effect or had produced aggravation, are not considered in the series. It includes only cases where the original condition had cleared up, and in which the source of complaint was the condition produced by the drug used. In most of them the nature of the orignal condition was only learned from the patient's story.

In the same series other cases, caused by "drug-store, barber-shop and beauty-parlor" therapy, included four from medicated soaps, three from tincture of iodine, two from turpentine, in one of which the turpentine was an ingredient of a popular liniment advertised and recommended by a druggist for use on an inflamed and exudative condition, two from beauty-parlor formulæ which I suspect contained mercury but could not get samples for verification, one from a counterirritatnt proprietary preparation, the culpable ingredient being an essential oil, one from lysol, one from balsam of Peru, and one from potassium permanganate. The total of thirty-four represents the cases in which there was no doubt as to the cause of the trouble. The remainder of the seventy were made up of cases due to poisonous plants, cosmetics, soap, industrial poisons and fur-dye, with the exception of twelve cases, in which I was unable to discover the cause.

The eruptions caused by sulphur and mercury were sufficiently uniform in their appearance to be considered characteristic. That from sulphur was erythematous and dry, often very faint in color and poorly defined, in many cases showing a very fine desquamation; in some instances the eruption was barely perceptible but itching was wide-spread. In such, especially if the subject was past middle age, idiopathic pruritus was strongly suggested. This yielded promptly to very simple measures. The mercurial eruption was always erythematopapular, frequently vesicular and clearly defined. It showed a particular tendency to relapse for weeks or months.

The sites involved were rather suggestive. The sulphur ointment being used for scabies, naturally the eruption was widespread, sparing the face, and especially intense on the lower abdomen, the axillæ and groins, the flexures and flexor surfaces of limbs. The mercurial eruption was on the face or face and neck in every instance.

Treatment consisted simply of discontinuing the use of the suspected preparation, and the use of a sedative or antipruritic lotion or cream. The bismuth cream according to the formula of Ormsby is excellent, particularly in sulphur dermatitis.

SUMMARY

The common practice of druggists in diagnosing and prescribing "over the counter" in the case of skin eruptions, and of barbers and beauty-parlor attendants in prescribing or applying drugs for external use, is the cause of a large proportion of cases of dermatitis venenata.

Successful treatment of such cases depends upon the recognition of the cause and its withdrawal. This frequently requires painstaking investigation, since the patient is often unaware and unsuspicious of the cause and nature of the trouble.

The remedy of the evil lies as usual not in legislation but in education. The better druggists do not practise it or permit their employees to do so. Others should not receive the support or patronage of the medical profession.

ACTINOMYCOSIS OF LUNGS AND SUPRARENALS. James Trent Christison and Margaret Warwick, St. Paul (Journal A. M. A., Sept. 24, 1927), report a case of pulmonary actinomycosis in a boy, aged 8 years. The roentgen-ray diagnosis made at first was "bronchopneumonia and pleurisy," and later it was "advanced tuberculosis." The boy died. The disease was uniformly distributed throughout the lungs, with no large accumulations of pus and no sinuses to the pleural cavity of chest wall.

THE ANATOMY OF DIGESTION *

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INTRODUCTION

It was Weir Mitchell who said that for the physician three things are necessary: bowels, brains and backbone. I propose to study bowels today, bones tomorrow and brains the following day.

If there is one feature of medical science today more hopeful than others, it is the breaking down of the subject barriers. This is especially true of investigation, but it is also true of teaching. In anatomy it is very marked. Segregation of the anatomists from clinical work and the study of function started early last century, when Sharpley gave up the combined chair of anatomy and physiology at University College, London, and carried off with him histology as a hostage to physiology. This segregation could not fail to react disadvantageously to anatomy. Now things are changed, and few of us would recognize the anatomic courses which we took in those of today. Thus, in the study of the alimentary tract the anatomist may justly claim all that is not biochemic. And we are finding it most profitable to work, independently it is true, but none the less side by side with the physiologist and the pharmacologist.

In the alimentary tract we have concerned ourselves with gross features of position, form and relationships of the several parts of the alimentary tract; with their range, modality and susceptibility to change. These are features of great practical importance for they largely form the basis of our judgment of the health or disease of the tract. The study which I present to you this morning is an investigation of the alimentary tract of the white healthy young male, the typical medical student himself.

THE MEDICAL STUDENT AS A STANDARD

The first study of the student is made immediately upon the commencement of the medical course, at the beginning of the freshman year. At this stage the student is still a layman without experience in medical work, with no background of medical study, without even the atmosphere of medical education to mitigate the feelings of the strangeness of this new sphere of work. We next take the same student after six months of the medical course, when the physique which he built up during the summer before his new duties commenced has been subjected to the strain of a course of intensive training very different from that characteristic of the previous academic work. Again we examine the student at the beginning of his sophomore year, after he has become immune to the sights, sounds and smells inseparable from medical education, when he is thoroughly at home in the medical school, and has safely passed the barriers which the first year's work inevitably throws across the path of freshmen.

TECHNIC OF ROENTGENOLOGIC OBSERVATION

It is our custom, aside from the roentgenoscopic examination, to make roentgenograms of the stomach ten minutes and sixty minutes respectively after the barium meal is swallowed. The meal consists invariably of four ounces of barium sulphate in twelve ounces of fresh buttermilk. It is taken between two and three hours after lunch during the afternoon. The amount of contents in the stomach when the barium meal is taken is small and negligible.

The vertebrae are counted from the sacral promontory upwards, the last free vertebra being styled the fifth lumbar. This is necessary because, after all, the true pelvis bears a fairly constant relation to the sacral promontory and all abdominal organs must dispose themselves with reference to the floor of the pelvis which is the lowest part of the abdominal cavity. In occasional students we find six rib-free vertebrae below the thorax but, in the absence of precise information regarding the number of presacral vertebræ, we cannot assume that an extra element is present.

For practical purposes we divide the vertebrae into upper, middle and lower thirds. This subdivision gives three vertebral levels and one disc level of approximately equal vertical dimensions.

The tube is placed as nearly as possible opposite the disc between the second and third lumbar vertebrae at a distance of twenty-five inches from the vertical plate holder against which the student leans his abdomen. The current used is thirty milliamperes, and, with a cassette, the exposure is one and a half to two seconds. By experiment we find that unavoidable variations in the relative position of the tube to the vertebral column may make a registration difference of not more than one of the vertical subdivisions or levels defined above. The extreme instrumental error is probably infrequent since, to

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* Read before the Sixth Annual Meeting of Pacific Northwest Medical Association, Boise, Ida., June 27-29, 1927.

obtain it, the tube must be raised or lowered the full two and one-half inches called for in producing a stereoscopic roentgenogram.

The student is told to hold his breath midway between inspiration and expiration, this being found in practice to be the most satisfactory instruction. It gives more even results from student to student than the instruction to inhale or exhale to the fullest degree.

Students have been examined in both vertical and horizontal postures, but, unless otherwise stated, the following observations refer to the vertical posture.

A STUDY IN ALIMENTARY PSYCHOLOGY

When we give the student his first barium meal he is obviously ill at ease. He has volunteered, it is true, and, though trusting us absolutely and without conscious fear for himself, feels awkward and dubious about this human experimentation which has been met so suddenly and so soon after committing himself to the medical course. His sympathetic system is deranged. Almost certainly he is clammy and perspiring; his mouth is rather dry; he has a slight tremor in movement and even in speech; quite possibly he has polyuria. These effects are usually more pronounced if he has been leading a close confined life in office or city work previous to the opening session. An hour after taking the barium his stomach is still large and distended laterally, even though peristalsis be regular and good. At the beginning of the sophomore year the same student will not exhibit any sympathetic disturbance. He has no apprehensions, conscious or subconscious. The outline of his stomach one hour after the barium meal shows the organ well-knit and of higher tone than it was a year before. The body of the stomach is narrower, though the passage of food is not hastened nor the peristaltic movement increased.

So we have drawn up a chart which illustrates the position of cardia, pylorus and greater curvature respectively in all the students whom we have examined between 1925 and 1927. This comprises some ninety individuals. On the chart the average positions of the cardia and pylorus remain constant, whether the roentgenogram be taken ten minutes or sixty minutes after the meal, and whether the student is a freshman or a sophomore. The former lies at the level of the lower twelfth thoracic vertebra, and the latter at the lower third lumbar vertebra. The greater curvature, however, gives a different picture. Whereas in the freshman ten minutes after the meal it is on the average opposite the lower fifth lumbar, and at the end of an hour opposite the middle fifth lumbar, it remains constant in the sophomore opposite the upper fifth lumbar. This small difference might be negligible, were it not that we are taking average values. Actually it indicates quite a significant change which is better realized if we examine the superposed sixty-minute tracings of the individual students.

Here is a typical stomach. Actually in this specimen the cardia lies opposite the upper first lumbar and the pylorus on the level of the disc below the third lumbar vertebra. But, whereas in the freshman year the greater curvature is low down over the upper sacrum, in the sophomore year it reaches no lower than the upper fifth lumbar. On both occasions peristalsis was excellent, and the degree of emptying the same. But the sophomore gastric tube is much narrower than it was in the freshman year.

The gradual improvement is even more obvious when the positions at all three examinations are superposed, namely, in October and February of the freshman year, and October of the sophomore year. The actual form of the stomach and its general position in the abdomen are of no consequence. The result is equally apparent in all types. But there are some organs which are already so tonic and well-knit in the October freshman study that there is no call for improvement. These are usually found in students of a phlegmatic temperament who have been living an open-air healthy life. Even in them, however, narrowing of the gastric tube can be observed in the sophomore study.

So accustomed are we to this improvement in outline that we expect it and the student expects it also. If by any chance it does not occur he becomes quite anxious, and we feel it necessary to investigate his general health. Here is the tracing from a student who was sickening with the grippe in his sophomore examination. The following day he was in bed and had a severe attack of influenza. Note how the greater curvature drops the entire vertical depth of the fifth lumbar, and the gastric tube is widened. Here is another student who was detected cheating in an examination just before the sophomore study was made. He was under severe mental strain, anticipating what shortly happened, namely, his expulsion from the school. In his case the lapse involved both greater curvature and pylorus in a drop of a vertebra and a half. Again the gastric tube is widened.

Usually the pylorus remains stationary. If it is involved we consider the case correspondingly significant.

As another example I am showing you the stomachs of two students who were on probation in their sophomore year, which means that if they do not do exceptionally good work they will be dropped at midyear. The one to the left knew that his work was satisfactory, and you see the improved tone of his stomach. The one on the right knew equally that his work was not satisfactory. Within a few weeks after the date of the roentgoneographic study he was advised to leave the school. You can see how the consciousness of his unhappy situation affected his stomach long before the official action was taken.

The lesson of this is very plain to me. While our present clinical roentgenographic examinations are quite satisfactory for the detection of gross lesions, our method stands sadly in need of modification for finer diagnostic analysis of our patients. Repeated examination is urgently necessary if we are to get the fullest information for our guidance.

The stomach outline constitutes a very sensitive barometer of the subconscious emotional condition, and it is readily affected by any psychologic disturbance, by the onset of disease or even declension in general health.

While we were making this examination we also investigated the effect of changing from upright to horizontal posture. Our chart shows that on the average the cardia rises from lower to upper twelfth thoracic vertebra. The pylorus mounts from upper third to lower first lumbar, and the greater curvature from middle fifth lumbar to the disc between first and second lumbar vertebrae. This average rise of a vertebra and a half in pyloric position and of three and a half vertebrae in greater curvature is not balanced by any real rise in position of cardia. Although the upper part of the stomach bends upon itself, the barium shadow shows the cardia almost unchanged in site, for it is held in position by the passage of the lower gullet through the diaphragm.

From time to time the form of outline of the stomach changes through general abdominal adjustments, but change of posture will not modify the stomach shape. It will not, for example, change a siphon-type into a cowhorn. It merely modifies the position.

TRICKS OF DUODENAL OUTLINE

The duodenal cap is not always shown and, if apparent, it is not always regular in outline. Indentations upon its contour are sometimes plainly due to gas pockets, and these may readily remain unchanged for hours. Beyond the cap is a narrowed portion which has been called by some authors the area of duodenal sphincter. In this area there are no indentations caused by plicae circulares. Anatomically it is found that the narrowed part terminates at or just above the entrance of the common bile duct, where plical circulares commence. Then follows a much more capacious lumen, notched freely by plicae. This appears on the roentgenogram or screen as a broad notched barium shadow. It comprises the lower half of the second or descending part of the duodenum and the horizontal or third part as far as the site of crossing of the mesentery.

Many students can produce temporary duodenal stasis by voluntarily contracting the abdominal wall and raising the viscera. When the effort is relaxed the stasis ceases. When stasis of longer duration occurs it is due to temporary constriction of the duodenum, not by weight of small intestine pulling on the mesentery, but by gas in the gut, often in the transverse colon causing an indirect pressure on the duodenum. This itself is one result of subconscious nervousness.

The fixation of the lower second (vertical) part of the duodenum to the dorsal abdominal wall is easily noted on the screen. The patient can alter the position of the pylorus at will by contracting his abdominal musculature. By raising the pylorus and duodenal cap the higher duodenum can be straightened out, whereas normally it forms an inverted U-tube. When this is done the barium can be seen traveling downward from the cap in a long thin stream until it reaches the more dilated duodenum below the entrance of the common duct.

We hear a good deal about duodenal stasis. Here is a perfectly normal student, thoroughly healthy, farmer bred, living on the farm on his vacation, who presents this picture. There is what might be called a cesspool duodenum, and you see the long trickle of barium down the thinner part of the duodenum, that area which is conceived by the physiologist as having a sphincter and conceived by the anatomist as not having a sphincter. I think the physiologists are right.

When I saw this duodenal stasis, I determined to watch the boy. I said nothing to him. That duodenal stasis lasted more than an hour. It should, therefore, have been pathologic, but it was not. The next time I took the roentgenogram there was no duodenal stasis at all. Duodenal stasis is very liable to occur, at least pseudoduodenal stasis in the freshman as the effect of that subconscious anxiety or nervousness of which I have spoken.

THE TRUE POSITION OF THE SMALL INTESTINE

In 1903 Monks gave an excellent description of the position of the small bowel. It was up underneath the diaphragm close by the stomach at first; succeeding coils lie on the right side to the right of the attachment of the mesentery. The lower coils lie on the left side of the abdomen below and to the left of the attachment of the mesentery, and the terminal coils in the true pelvis.

I have never seen a student with intestinal coils arranged like that. I have seen them arranged thus both in the operation room and the autopsy room, and, of course, it goes without saying that I have seen them in the dissecting room many, many times. It is the usual position there, but it is not the usual position in the student.

We invariably find the small intestine lying in the lower abdomen and true pelvis. In occasional instances only, even in the horizontal posture, is there a loop or two, never more, above the level of the pylorus. The high position of the proximal coils of jejunum near the diaphragm in the operating and dissecting rooms is entirely unlike that found in normal life.

The peristaltic wave in the small intestine progresses at widely diverse rates of speed. It may be so fast that one can see only the progress of the greatly diluted barium in the upper bowel by submitting serial roentgenograms to cinematographic treatment. It is so slow in the lower ileum, when there is spasm of the transverse colon, that one cycle of peristalsis takes half an hour for its completion.

MOVEMENTS OF THE COLON

The proximal colon is defined as that part of the large bowel extending from cecum to splenic flexure.

We have observed the cecum and ascending colon during filling. There is a slow peristaltic wave which passes over both parts of the bowel with alternate definition and obscuration of haustra. We have not seen antiperistalsis. By taking successive roentgenograms at intervals of two minutes or less and submitting these to cinematographic treatment the method of filling and contraction is rendered apparent.

By the method just described we have also observed the same peristaltic wave in the transverse colon. The slow progress of peristalsis modifies but does not obliterate the haustra. One should regard the bowel outline as one would the jejunum with its plicae. That means the haustra should be ignored for the peristaltic wave passes over them and makes but secondary use of them. Changes in haustral configuration are accessory to the peristaltic wave. We have, further, observed on the roentgenoscopic screen the progress of the peristaltic wave. It is apparent most definitely in a bowel of which the haustra are sufficiently separate to be observed without abdominal pressure by the hand. Such pressure temporarily inhibits peristalsis. The wave progresses much more slowly than peristalsis in the stomach. We have not seen anastalsis, that is, reversed peristalsis. Nor have we seen mass movement as described by Barclay and Holzknecht. Our conclusion is that contents are moved along the proximal colon by slow peristalsis in precisely similar fashion to the movement already recognized in stomach and small intestine.

THE SPASTIC BOWEL

Here is another story altogether. This is a warning. It is a spastic bowel; it is my bowel on the twenty-second day of February of last year Why this tremendous difference? It was George Washington's birthday, and we had chosen that day to make this experiment because we regarded it as one of the quietest days in the year, when we would not be disturbed by anybody or anything when all the world was rightfully on holiday. I was strapped down to the Bucky diaphragm. I did not know what the result of this experiment was going to be. I did not know whether I would get an x-ray burn, whether I would touch up my pancreas, lose my islands of Langerhans, or interfere with my adrenals. I did not know whether my assistant was capable of carrying the great cassettes, fourteen by seventeen, and placing them underneath me and taking these photographs in rapid succession, and worse than all these, every time my assistant crossed the floor of that x-ray room it cost a dollar. Can you wonder that this is the picture of what it cost a Scotchman to spend a dollar? The transverse colon is so greatly constricted that there is apparently no possibility of the onward passage of contents. The cecum and ascending colon become more and more distended. The transverse colon jogs about, but the tight spasm of its outline never relaxes for a moment.

Now I am going to show you how we have been helped in our investigation by making moving pictures of the alimentary canal in action. But above all things remember that the ancients were not far wrong when they localized the seat of emotion in the abdomen. The stomach and bowels clearly reflect the subconscious ego. Mr. Edmunds in his travels in the Balkans once slept three in a room. Among the company was a Bulgar who went to sleep muttering to himself, "My stomach she need an onion. She need an onion every day."

SUMMARY

1. The study of the normal alimentary tract in health of young male students affords a criterion for observatio nof pathologic conditions.

2. All parts of the tract are exceedingly sensitive to emotional or nervous conditions. These influence different parts of the tract in divers directions. The stomach becomes atonic in outline though not in movement nor in emptying time. The duodenum shows pseudostasis. The transverse colon exhibits a spasm which may absolutely inhibit the onward passage of contents.

3. The sites of cardia and pylorus are affected in similar manner though not so greatly as are the positions of the greater curvature in the pyloric vestibule and gastric tube.

4. The normal position of the small intestine in the living, whether upright or horizontal, is in the lower abdomen and true pelvis: its disposition is in ladder coils.

5. Peristalsis in the lower ileum may be exceedingly slow in spasm of the transverse colon, one wave taking half an hour to complete its cycle.

6. The proximal colon (cecum, ascending colon, transverse colon) exhibits a peristaltic wave like those of the stomach and small intestine. Its rate of progress in the transverse colon slower than that of stomachic peristalsis.

STUDIES IN TREATMENT OF BRONCHIAL ASTHMA. H. B. Wilmer, Philadelphia (Journal A. M. A., Sept. 17, 1927), stresses the fact that a case of asthma cannot be successfully treated without careful study therefore, hospitalization for from three to four days is ideal. Operations should not be performed in allergic cases unless a complete survey is first made, as many cases are made worse by too hasty operative procedures. It has been proved that many patients develop a seeming sensitiveness to their own respiratory secretions, and when the filtrates derived from these secretions are used subcutaneously, marked relief has been experienced in cases otherwise unrelieved. Caution should be used in the administration of these filtrates, as severe reactions have been experienced, in the form of asthmatic seizures. One should not hesitate to retest if the evidence is sufficient that there is a specific protein sensitivity, as many patients may not show any reaction today to the test and may be markedly sensitive tomorrow.

THE MANAGEMENT OF OCCIPITOPOSTERIOR POSITIONS *

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There are certain serious complications which may occur during delivery which the attending doctor usually has more or less in mind while handling every obstetric case. Some of these are placenta previa, premature separation of the placenta, rupture of the uterus, prolapse of the cord, and so forth. All of these may be considered as immediately threatening the life of the mother, child or both, but fortunately these complications are not frequent, there is more or less agreement among obstetricians as to the proper handling of them, and textbooks and teachers devote a great deal of attention to them.

Furthermore, a doctor might be in general practice for many years without ever encountering one of these so-called "major obstetric complications," but it is very unlikely that this same doctor would be in practice very long before being called upon to attend a primipara with a persistent occipitoposterior position. In such a patient the pelvic measurements have appeared ample, the fetus not unduly large and no evidence of disproportion exists between fetus and maternal pelvis. The doctor has felt reasonably sure that his patient would have a fairly easy, rapid and so-called normal delivery, but after she has been in active labor for many hours and complaining bitterly of the pain in her back, and with membranes probably ruptured, a vaginal examination shows the cervix is not completely dilated and the head is not as low in the pelvic cavity as would have been expected, considering the length and activity of the patient's labor. Digital examination also reveals the fact that the occiput is posterior and is showing no tendency to rotate to an anterior position. The patient realizes she is not progressing in her labor, she is becoming tired and discouraged and she and her family are likely to be urging the doctor to "do something" to relieve the situation.

The methods which have been employed for relief have covered a wide range of maneuvers, all the way from "watchful waiting" to cesarean section, including version and various methods of rotation with and without the aid of forceps. The mere fact that there has been such a multiplicity of treatments used in the handling of unrotated occipito-

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* Read before the Thirty-eighth Annual Meeting of Washington State Medical Association, Tacoma, Wash., Aug. 29-31, 1927.

posterior positions is the best indication that there is no very satisfactory treatment in the hands of the profession at large.

It is not the purpose of this paper to criticize in detail any of the aforementioned procedures, nor to say that the circumstances surrounding the individual case will not call for variations in technic but it is my intention to lay before you a method which will prove applicable in the vast majority of cases of unrotated occipitoposterior positions. So far as I know, this method was evolved and the details of technic first worked out by the late Dr. Ralph H. Pomeroy of Brooklyn, whose untimely death occurred before he had published his results and conclusions. The first article dealing specifically with Pomeroy's method was published by Dr. W. Sidney Smith of Brooklyn and appeared in a recent issue of *Surgery, Gynecology and Obstetrics.*

For years Dr. Pomeroy had taught his internes and residents at the Brooklyn Hospital what he termed "suprapelvic rotation" as the simplest method of handling occipitoposterior positions, and to those of us who were members of the house staff on his service it came to be a real pleasure to handle these cases instead of being the bugbear that it is to most general practitioners. It is applicable in practically any case, in which the cervix is sufficiently dilated to permit a hand of the operator being passed through it, and in which the uterus is not so tense as to be in danger of rupture from slightly increased intrauterine tension. It is easier when done immediately after the membranes have ruptured and before the uterus has become firmly contracted about the child's body.

The technic is as follows: Complete relaxation is obtained by a short anesthetic (either ether or chloroform, not gas) pushed to the point of surgical anesthesia, at which point the patient is drawn down on the table so that her hips rest on the edge, and she is catheterized and prepared as for delivery. The obstetrician should wear, preferably but not necessarily, elbow gloves. The vagina is cleansed with green soap and then stretched until it will readily accommodate the closed fist.

Now for the rotation proper. The doctor should use his right hand for an R. O. P. and his left hand for an L. O. P. If the membranes are unruptured, they should be ruptured at this point, with a hand and forearm plugging the vagina and keeping the liquor from draining away. The more liquor present the easier the rotation.

With the hand in the prone position, the child's head is firmly grasped so that the thumb rests against the lower and the fingers against the upper side of the head. The fingers may also impinge upon the shoulder and assist in its rotation where it does not readily follow the rotation of the head. The head is then pushed completely out of the pelvis and rotated through an arc of 180°, i. e., an R. O. P. is converted into an L. O. A., or an L. O. P. into an R. O. A. so that the head lies in the same oblique diameter after the operation that it did before, the only difference being that the occiput is now anterior instead of posterior. It is sometimes necessary to aid the shoulder rotation by means of the external hand on the abdomen or by an assistant.

As soon as the rotation is completed the anesthetic is stopped, and the patient allowed to come out of the anesthetic, but the internal hand is left in place until the head engages, which usually occurs with the first retching or vomiting or with the first recurring pain. Straining on the part of the patient may be hastened by gently dilating the sphincter ani with the fingers of the external hand. A firm abdominal binder is applied, and as soon as the head engages the hand may be withdrawn without fear of the head reverting to the old position. The patient is then left to resume her labor, which usually becomes active within the hour.

It is indeed most gratifying after performing this suprapelvic rotation to observe with what promptness these patients either deliver spontaneously or else get the head on the perineum, where a low forceps extraction may be done. While the greatest value of this procedure is in the primipara, still I recall the case of a multipara of large dimensions who seemed to be absolutely unable to deliver, although having a very active painful labor, but who had her baby with the first good pain following rotation.

The advantages of Pomeroy's "suprapelvic rotation" may be summarized as follows:

1. It may be performed as soon as the cervix is sufficiently dilated to permit the hand being passed through it, which means a great saving of time and pain for the patient.

2. When properly done there is practically no danger of the occiput reverting to its original posterior position.

3. It is a one man operation, requires no instruments or special preparation of the patient and may be performed either in the home or hospital.

DEHYDRATION FEVER*

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Dehydration fever is recognized in pediatrics as a disorder coming on about the third day in infants who have not received milk or water. It is also called inanition fever and is characterized by high temperature, without physical signs to account for it and is relieved in from a few hours to two days by the free exhibition of fluids. It is, however, fatal if this simple treatment is not instituted.

The same condition in adults does not seem to have been described as an entity or as a possible complication in states where a condition of dehydration readily develops. Only after using hypodermoclysis in a febrile stuporous patient without adequate discernible pathology to account for the fever, followed by prompt improvement, was I led to call the condition dehydration fever and to look for more examples to justify the use of the term as applied to adults.

From the nature of things, the condition will be found only as a complication of other disorders in adults, particularly in comatose or stuporous states. In such conditions, which are commonly terminal and occur in elderly degenerated patients, the development of fever, rapid pulse and stertorous rapid breathing after a few days of stupor usually leads to a diagnosis of terminal pneumonia and a hopeless prognosis. It is a question in such cases how much of the fever is due to apoplexy, to a complicating pneumonia or to dehydration.

Forcing of fluids by mouth is a well recognized help in febrile disorders. Conversely, the prognosis should be and is more grave in those febrile states associated with coma, in which fluids are poorly taken if at all. The picture of the victim of an apoplexy strangling in efforts to nourish himself more or less inadequately or lying in complete coma for three or four days and then gradually or suddenly developing high temperature which goes progressively up the scale with a fatal termination is familiar to us all.

It appears possible that some if not all of this fever is due to dehydration and that adequate procedures to relieve this condition is curative or at least eliminates that fraction of the fever, so that the body is able to carry on and take care of complicating infections.

CASE REPORTS

Case 1. A. A., white male, 62 years of age, suffered a second stroke of apoplexy and went into coma. That afternoon the temperature was 102° F. After three days of coma the temperature was 105° F., pulse 130, respiration 40 with stertorous breathing —a typical picture of terminal pneumonia, without, however, the findings of this disease.

The rapid wasting of tissue was so striking that 300 c.c. of normal salt solution was given hypodermically every six hours. Following this the temperature never rose over 103° F., and on the eleventh day it was 100° F. The patient was conscious and could take fluids in small amounts by mouth. Hypodermoclysis was stopped. Six days later the temperature rose suddenly to 102.8° F. with resumption of coma. Hypodermoclysis was resumed with drop in temperature in two days to 99° F.

At this time it was determined to see if the temperature might rise again, if the hypodermoclysis were discontinued. Two days later a repetition of coma and fever of 102° F. ensued which again responded with rapid fall in two days to normal, on exhibition of hypodermoclysis as before. The salt solution was continued till the patient was quite conscious and it was assured that adequate fluids were taken by mouth.

Two months later the patient walked out of the hospital and is now completely recovered and at work.

Case 2. R. S., white male, 64 years of age, suffered a crossed paralysis of sudden onset with coma. He rallied enough in two days to take fluids by mouth and got along with slight subfebrile temperature till the tenth day, when a progressive daily rise of temperature, pulse and respiration developed, due to right lower lobar pneumonia. When the temperature reached 104° F., coma deepened so that fluids were no longer well taken by mouth. Administration of 1000 c.c. normal salt solution hypodermically twice daily was started. In two days the temperature was below 102° F. and never rose above that during the course of the pneumonia or subsequent left femoral phlebitis, from both of which the patient finally recovered.

Case 3. Mrs. M. S., white female, 55 years of age, developed double left pneumonia with rise of temperature to 105° F. at which time she became stuporous and stopped taking fluids. Normal salt solution 1000 c.c. hypodermically was started twice daily. The temperature dropped a degree each day with return to consciousness in three days and ability to take adequate fluids by mouth. Gradual defervescence then took place without further hypodermoclysis.

CONCLUSION

A response to therapy has been described which makes it seem plausible that dehydration fever is a condition to be found in adults.

The relief of this condition improves the prognosis of the underlying disorder.

STANDARDS IN ROENTGENOLOGY. P. M. Hickey, Ann Harbor, Mich. (Journal A. M. A., Sept. 8, 1927), pleads for greater uniformity in teaching roentgenology to undergraduate students; and that roentgenologists make a determined effort to require a higher standard of qualifications in those practicing this specialty; that a more uniform type of roentgen-ray reports be established in clinics and hospitals, and that a standard nomenclature be adopted for the purpose of clarifying the literature.

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* Read before the Thirty-eighth Annual Meeting of Washington State Medical Association, Tacoma, Wash., Aug. 29-31, 1927.

FUNDUS PHOTOGRAPHY *

ITS VALUE AS A MATTER OF CASE RECORD AND FOR TEACHING

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Photography of the human fundus oculi has been carried out for many years, but recent advances make it altogether feasible and possible to get pictures of the fundus without much effort or expense. The clinical possibilities of the new Zeiss camera are great. The apparatus is simple, fastens on the ordinary Zeiss slit lamp base and is of modest cost. It has been described by Bedell in the *American Journal of Ophthalmology*.

The apparatus has been spoken of as being practically fool proof, and one can get a magnified picture of the fundus of about twenty diameters with one-half second exposure, as easily as one can take a snap-shot. On the photograph, two unavoidable reflections of the micro-arc-carbons are always present as circle spots, but these are made to occupy an unimportant part of the fundus field. The requisites are a dilated pupil, clear media, and the younger the patient, the more transparent the anterior retinal layers, therefore, the more distinct the retinal detail. As Von der Heydt says, any one who has ever seen a fundus can appreciate these pictures.

I am deeply indebted to my friend and teacher, Dr. Robert Von der Heydt, of Chicago, who took the first pictures of the fundus ever made in America with the original Zeiss camera. The first pictures were shown one year ago. As an evidence of the importance of this new clinical aid to ophthalmologists, one notes that there were six papers dealing with fundus photography and stereoscopic photography given at the German Ophthalmological Society meeting this year in Heidelberg.

The value of these photographic records of fundus conditions, along with one's history, clinical and x-ray findings, etc., are self-evident. The camera is easy to operate, cheap and fascinating. Some American ophthalmologists at the present time photograph the visual field outline on a scotometer. This procedure is much easier and simpler than that. I have a few stero photographs which I am passing around. Perhaps this would come under the head of playthings in ophthalmology, but we must all have our moments of relaxation, and if one gets play from his profession it is no longer a drudge or work.

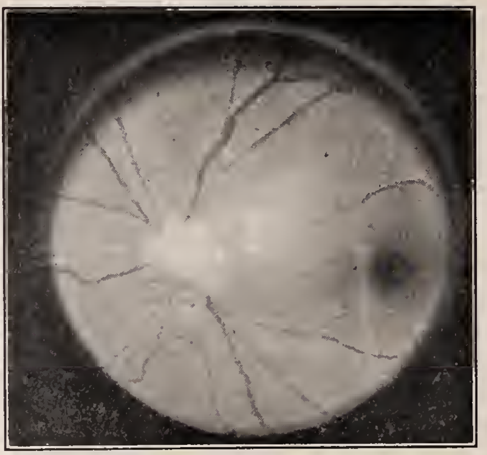

Fig. 1. Glaucomatous cupping.

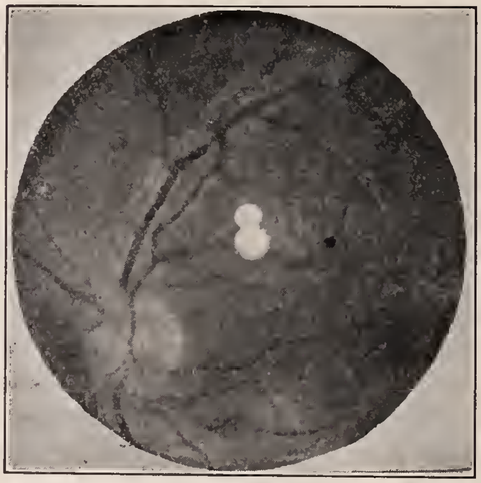

Fig. 2. Folds in retina radial to macula seven days traumatic.

The two white central spots are the unavoidable carbon reflections of the lamp taking the pictures. They are the Purkinje images of the two surfaces of the ophthalmoscopic lens of the camera.

The important scenery to be photographed must be draped around this area. Fundus photographs without these spots have been taken, but the proceeding is much more complex. (Dimmer's camera fills a room and was paid for by the Rockefeller Foundation.)

No.1. Normal fundus. First fundus ever photographed in America, (May, 1926). The dark area is the macula.

No. 2. Normal fundus with physiologic cupping. The many reflections are due to the youth of the individual. (Young people have clear transparent anterior retinal layers.)

No. 3. Normal fundus. Two cilioretinal (large) vessels. One-sixth of normal eyes have these vessels springing from the edge of disc. *Few* have them so large and characteristic in this case. The high light on the macula is the macular reflex. Dimmer uses the term *fovelar reflex* which is correct but not so new.

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*Read before Montana Academy of Oto-Ophthalmology, Missoula, Mont., July 12, 1927.

No. 4. Normal fundus, with inversion of the nerve entrance direction. (Nerve comes from temporal side.)

No. 5. Medullated nerve fibers. Corresponding enlargement of the blind spot.

No. 6. *Sweeping medullated nerve fibers* which illustrate the anatomic fibre direction. Showing that some (a few) of the fibres revert into the disc direction.

No. 7. Myopic fundus with crescent.

No. 8. Fundus of high myopia. Complete posterior staphyloma and thinning of choroid.

No. 9 Congenital retinal anomaly, rare, undeveloped. The retina is rolled up, i. e., it never is really unrolled. The black area below the roll is choroid. (*The flame shaped area is hemorrhagic.*) The case had other congenital changes. Cleft vitreous and retained hyaloid artery remnants (two brothers).

No. 10. Coloboma (mild)of nerve head. Nerve head slightly enlarged, excavated and shows irregular knobby surface (inside of excavation).

No. 11. Coloboma of nerve head extreme. The nerve head is as much larger as the picture shows (magnification the same).

No. 12. Retinitis pigmentation. Extreme case with hole in the macula (dark bordered lighter area at edge of the picture). Note thin vessels.

No. 13. Rare photograph of a hole in a detached retina. The black area is the hole. The white color around it is a duplication of retina.

No. 14. Optic atrophy in Leber's disease (hereditary). Optic atrophy in brothers (usually). Very rare. Only diagnosis of the kind made fifteen years ago, in twenty-four years of practice and clinics.

No. 15. Tabetic optic atrophy.

No. 16. Optic atrophy in retrobulbar neuritis (temporal pallor).

No. 17. Optic atrophy in embolism of the central artery (incomplete). The small whorls at the disc border are enlargements due to collateral circulation. (*Good light and focusing of lamp necessary to show this slide.*)

No. 18. Area of choroiditis (focal lesion in young man 35).

No. 19. Choroiditis. General due to trauma, shell injury.

No. 20. Plaque-like choroidal degeneration.

No. 21. Six months after optic neuritis. The neuritis in the acute stage drew attention to the kidneys and led to the removal of one (tuberculous). There were obliterated vessels at the disc.

No. 22. Very slight macular changes. The picture shows the foveal rim reflex (normal). Oval area around the macula (new nomenclature) inside of this rim is the fovea. The darkest area is the macula. Hence macula is smaller than the fovea and the word foveolar has been dropped.

No. 23. More advancing macular change.

No. 24. Hemorrhage (dark) exudate (light) (nephritis).

No. 25. Thrombosis; many hemorrhages.

No. 26. Retinal hemorrhage in high blood pressure. The white areas are remnants of hemorrhage one year old. The dark areas in macular region are fresh hemorrhages. This picture particularly demonstrates the value of fundus photography for records.

EMOTIONAL AND PSYCHIC FACTORS IN EXOPHTHALMIC GOITER, DIABETES MELLITUS, AND DISEASES OF NOSE AND THROAT. The cause of the nervous symptoms in these chronic infections are classified by Charles Hugh Neilson, St. Louis (Journal A. M. A., Sept. 27, 1927), as follows: (1) chronicity of symptoms and disturbed physiologic function; (2) chronicity in diagnosis, and (3) chronicity in therapy. Constancy in the symptoms is an outstanding feature. Headaches, frontal pressure symptoms, difficult nasal breathing, dizziness, frequent respiratory infection, and, as some patients say, a constant nagging, headachy feeling, ranging from discomfort to actual pain, are some of the many constant and chronic symptoms found here. This constant discomfort gradually wears down the psychic morale of the patient, and then begin the emotional and psychic symptoms so often found in this class of case. The diagnosis of these infections is frequently difficult, particularly when the physician tries to explain to the patient the reason for all his symptoms. The physician frequently calls in consultants who give slight differences in the diagnosis, and often give a reversed diagnosis. These multiple consultations and, as is often the case, frequent discussions of the consultants in the presence of the patients are well known causes of the mental instability which results in emotional and other nervous disturbances. I have a strong conviction that the medical handling of these cases is frequently a cause of the mental and psychic instability. What influence has chronic therapy in the production of these nervous states in the course of this disease? The daily or triweekly nose and throat treatments, extending over months and even years, is bound to and does have a bad psychologic effect.

MALNOURISHED CHILD. L. W. Sauer, Evanston, Ill. (Journal A. M. A., Sept. 17, 1927), gives a brief outline of a simple, intensive, individual method of treatment for the malnourished child brought to the physician's office. It has been used successfully in several hundred instances during the last five years. The best and most permanent results have been obtained in malnourished school children with: (1) insufficient food or rest; (2) tuberculosis of the lymph glands, the pleura or the bones and joints; (3) anorexia, the result of a nervous environment; (4) goiter with or without increased metabolic rate; (5) secondary anemia. The method has not been used in underweight children with any disease of the heart, blood, urinary system or gastrointestinal tract, including acidosis and diabetes, as such children usually require other special diets and treatments. An analysis of thirty consecutive underweight children, aged from 5 to 12 years, treated for three months by this "individual" method of intensive feeding reveals that: 1. Most of the patients fatigued easily, had poor posture and were anemic. 2. No child had been eating sufficient food; twenty-four had faulty food habits (improper food, eating between meals, especially sweets and iced foods or drinks. 3. Twenty-six had been having insufficient rest. 4. In sixteen the cutaneous tuberculin test was positive. These included eight patients with bronchial gland tuberculosis; three children with tuberculous pleurisy with effusion; two with bone tuberculosis, and one each with cervical glands and pulmonary tuberculosis. 5. All but two were above the average height for age; twenty were of the asthenic type. 6. The thyroid gland was visibly enlarged in nine; two of these had tachycardia and increased basal metabolic rates. 7. Three had active, tardy rickets.

NORTHWEST MEDICINE
The Journal of the State Medical Associations of Oregon, Washington and Idaho
Devoted to the Interests of the Medical Profession of the Pacific Northwest
Editorial Office, 543 Stimson Building, Seattle, Wash.
OCTOBER, 1927

EDITORIAL

THE WASHINGTON ANNUAL MEETING

Although the Washington association has held many notable annual meetings in past years, none has given more satisfaction than the gathering at Tacoma last month. The new Winthrop Hotel is ideally situated for essential contacts. The proximity of the church where the scientific sessions were held made the meetings easily accessible, which is always an advantage. Golf has become such an established factor in the lives of most doctors, that it has been adopted as a permanent feature of this association. On this occasion a day was devoted to exploiting and demonstrating the many attractions of this ancient sport. Probably the representative attendance from various parts of the state was due to a degree to the interest manifested in the golf tournament.

As is customary at state meetings in latter years, the majority of the papers were provided by members of the association. The guests were well known members of the profession, whose leadership and writings are familiar to all. Dr. Dean Lewis is one of the best known surgeons of the present day. He is always welcome to the meetings of this association, and imparted information on a number of surgical topics which was thoroughly appreciated by attentive audiences. Drs. George and Gladys Dick have established an international reputation by their original work in the prophylaxis and treatment of scarlet fever, which will immortalize their names in relation to this disease. It was a great pleasure and satisfaction to meet these distinguished people and to listen to a personal recital of some of the great things which they have accomplished.

The papers presented at the pediatrician's section represented the latest work in this branch of practice, demonstrating that the babies of this state are being protected by an up-to-date group of active practitioners. A meeting of county health officers has become an established feature of these state gatherings. The day previous to the regular meeting was devoted to sessions of these officials, where many problems were discussed relative to the health and wellbeing of our citizens. Special attention should be called to the luncheon of the Public Health League, where the largest attendance in its history was assembled. Reports from the officers and their executive secretary, Mr. Robert Jones, demonstrated the permanent position which this organization has attained in advancing the public welfare of this state. If anyone in the past has had a question regarding the necessity of this organization, it was made evident at this time that it holds a unique position in the activities of the medical profession and their relation to the public welfare. A recital of its accomplishments during the past year was a sufficient indication that it will continue, with a prospect of greater activity and more accomplishments for the future.

The public meeting on the evening of the last day was of unusual moment. Newspaper publicity for two days of the medical meetings had developed a special interest in the public mind. Accordingly an audience assembled that crowded the spacious Baptist Church and many could not gain admission. Addresses by visiting physicians and members of the association conveyed real information on a number of vital problems pertaining to health and disease.

The officers of the association, especially those from Tacoma, are to be congratulated on their efficient management of its affairs during the past year, in promoting the solidarity of the membership and their interest in its activities, as well as for the successful and attractive features of this annual gathering.

THE SALEM MEETING

In past years there have been many interesting and satisfactory meetings of the Oregon State Medical Society, but that held at Salem last month was unanimously agreed to be the most successful in the recent history of the organization. The attendance was large, representing all parts of the state. There was a spirit of cordiality and harmony which makes for success in all gatherings, whether medical or otherwise. No matters of dispute or disagreement arose to mar the harmony of the gathering. The welcome extended by the medical profession of the city to the visiting brethren, and of the doctors' wives to the visiting ladies, served to make everyone feel at home from the day of arrival. The group of public institutions in the capital city serves as an attraction to all visitors, on this occasion being offered for personal inspection.

The program was of an especially ambitious character, presenting a morning session with papers of general interest, with medical and surgical sections for the afternoon. The papers presented were of a high order of scientific interest, most of them from leading representatives of the profession of the state. Of the visiting speakers, Dr. Dean Lewis of Johns Hopkins is personally so well known and admired by the general profession that he needs no introduction. His addresses on surgical topics were enlightening from their simplicity and directness. It was a satisfaction to listen to Dr. David Marine of New York City, who has been so intimately associated during recent years with prophylaxis and treatment of thyroid gland disease. Dr. Murphy of Boston has become well known within a few years from his investigations in connection with Dr. Minot, relative to the treatment of pernicious anemia with liver diet. His description of the discovery of this successful method of treating this obstinate disease, and the results obtained within a few recent years constitute one of the scientific romances of modern medicine. Dr. Adair of Minneapolis was a welcome visitor, presenting up-to-date information regarding diseases of the newborn infant. Preceding the meeting of the state society, was an interesting day with two sessions each for papers by the pediatricians, as well as a gathering for city and county health officers, the meetings of both organizations being replete with topics of vital interest. Mention should be made of the public meeting on the evening of the first day, open to the general public, at which time visiting as well as local physicians addressed a crowded house of eager listeners, featuring various phases of the treatment and prophylaxis of various common diseases.

The social features of the occasion terminated the evening of the last day with a banquet, whose postprandial features were directed by Dr. George W. Tape, now of Paso Robles, Calif., who formerly was a well-known practitioner among the Oregon profession. Due to his rotundity of form, florid complexion, wealth of silvery locks and benign countenance, he has long been known as "the bishop." He is one of those men most at his ease when addressing an audience. As a raconteur he is incomparable and much in demand at gatherings of this sort. While his greatest successes have been of a mirth-producing character, on this occasion, as on others, he demonstrated an equal facility for serious considerations. The evening terminated with the consensus of opinion that the Salem profession had been successful in facilitating a most memorable meeting of the state society.

THE IDAHO MEETING

At the annual meeting of the Idaho State Medical Association, held at Twin Falls last month, the attendance while fair, was not so large as the excellent program merited. Despite the fact that the state measures nearly five hundred miles from north to south, and varies in width from about forty-five miles at the northern boundary to over three hundred at the southern, the percentage of its members present was probably as large as that in attendance at similar meetings in other states. The large mountainous areas also added to the difficulties of travel, but the roads are yearly becoming better, and the magnificent scenery repays one for the time spent in going long distances.

The speakers all stressed the practical side of medicine, so that those present felt they were better prepared for their daily work. The members of the Idaho association made excellent contributions to the program, some of which were based on research, and a paper on the history of medicine was not only interesting but had real literary merit. The annual banquet was held at the Rogerson Hotel on the evening of August 30. After the able adrress of the president, Dr. D. L. Alexander, the remainder of the evening was devoted to stimulating discussion of the problems of the Public Health League. Dr. I. H. Moore, of Seattle, who was one of the founders of the association, was toastmaster and presided at this portion of the meeting. The discussion brought out the fact that Idaho has the same problems with cults and state industrial work that prove such irritants in neighboring states. The scattered population makes the work of the League expensive, so that some members feel the financial burden. However, the majority conside the load well worth carrying, and it was pointed out that the League had been in some ways of financial benefit to the profession.

There seems to be a growing tendency for the profession to take a firm stand for scientific medicine and just remuneration for industrial work. The feeling appears to be growing that the profession has been too willing in the past to work quietly alongside the cultist and let those who have no knowledge of the sciences upon which the healing art is based, be the judges between the well trained physician and his loud mouthed incompetent competitor. The members of the Idaho association seem well able to cope with these problems, and it will be well worth while to see what their determined efforts bring forth. An atmosphere of good fellowship pervaded the meeting, and those from other states were shown that warm hospitality so characteristic of Idaho.

A TRIBUTE OF ADMIRATION

At a meeting of King County Medical Society, Sept. 12, the evening was devoted to an expression of affection and admiration of Dr. James B. Eagleson, who has completed forty years of practice in Seattle. A life-sized bust in bronze was unveiled which will remain as a permanent memorial in the society's assembly hall. Testimonials were offered by physicians and prominent laymen, expressing the consideration in which he is held by the medical profession of the city, as well as the general public, by reason of his services in many capacities in the promotion of the welfare of the community. Only two physicians are living who were established in Seattle when he began to practice. During this entire period of years he has been an outstanding figure in the medical life of the Northwest. By reason of his personal qualifications of the highest order, he has been an example of all that is honorable and upright in the medical profession. A medical man of such a character is recognized as an example and inspiration to all members of the profession.

It was noted that Dr. Eagleson was the first medical man on the Pacific Coast to announce, in 1898, that his practice would be confined exclusively to surgery. Since that time his surgical ability, good judgment and conservatism have distinguished him as one in whom confidence could be absolutely entrusted, and consequently he has been recognized as one of the outstanding leaders of the profession. His efficient leadership in the world war has been universally recognized in connection with his establishment and supervision of Base Hospital No. 50. He has been a consistent supporter and participant in the municipal affairs of Seattle, whose most active and outstanding development has been covered by his period of active practice. This journal has been closely associated with him and has been benefitted by his wise counsel for its nearly quarter of century existence, during which time he has served as managing editor. Everyone present at this gathering agreed that a tribute of this character, extended to a man during his period of active life, is most fitting and commendable, rather than following the usual rule of extolling one's virtues after he has departed and is beyond the possibility of personal appreciation of the love and commendation of his friends. Such a tribute might well be emulated on future suitable occasions.

MEDICAL NOTES

The American College of Physical Therapy announces that plans have been completed for its 1927 Clinical Congress of Physical Therapy and 6th Annual Meeting, to be held at the Hotel Sherman, Chicago, Oct. 31 to Nov. 5. The program is extraordinary in character. The first three days are to be devoted to a school of instruction. For this purpose the country's most prominent clinicians and teachers have been selected and intensive fundamental and clinical training will be given. The fifth day of the Congress will be devoted to a joint session. Numerous special addresses by some of the foremost leaders in medicine will be offered. These will be of general interest to all whether in one specialty or another. The closing day will be given over to hospital and dispensary clinics.

OREGON

State Medical Society Officers. At the annual meeting of the Oregon State Medical Association, held at Salem Sept. 1-2, the following officers were elected for the ensuing year: President, Dr. Hugh Mount, Oregon City; president-elect, Dr. L. B. Bouvy, La Grande; first vice-president, Dr. J. W. Siften, Hood River; second vice-president, Dr. A. B. Peacock, Marshfield; third vice-president, Dr. A. W. Keene, Silverton; secretary, Dr. F. D. Stricker, Portland; treasurer, Dr. J. Earl Else, Portland.

Physicians and Nurses Attend Institute. The second annual state institute for physicians and nurses was held at Salem Aug. 30-31, preceding the annual meeting of the Oregon State Medical Association. The principal lecturers were Dr. Fred L. Adair, Minneapolis, Minn., professor of obstetrics and gynecology at the University of Minnesota, and Miss Hazel Corbin, New York City, director of the Maternity Center Association of New York. Among local physicians who addressed the institute were Drs. Ira Manville, E. J. McCusker, Irving Lupton, E. A. Gordeau, C. A. Downs and Frank Brown. Dr. Howard Taylor, of the Department of Psychology of the University of Oregon, also contributed to the program.

Poliomyelitis at Klamath Falls. Following the discovery of several cases of poliomyelitis at Klamath Falls, the physicians of the community have recommended that all children under the age of fifteen years be confined to their homes and isolated as far as possible from other children.

Orthopedists Convene. The Pacific Northwest Orthopedic Society held its semiannual meeting at

Portland Sept. 17. Clinics were conducted by Portland members of the society at several hospitals in the city. The session culminated in a banquet at the University Club.

Speaks on Liver Diet. Dr. William P. Murphy of Boston, Mass., who, with Dr. George R. Minot of Harvard University Medical School, has offered convincing evidence of the value of a diet of liver in the treatment of pernicious anemia, was a recent visitor in Portland, his native city. Dr. Murphy was formerly a student at University of Oregon Medical School.

Hospital Staff Officers. The staff of the recently opened Columbia Hospital at Astoria held a meeting Sept. 14 for the purpose of organization. The following officers were elected: President, Dr. Toivo Forsstrom; vice-president, Dr. E. B. Waffle; secretary, Dr. G. S. Morgan.

Foreign Health Authority Visits Salem. Dr. Thomas Scherrer, of Vienna, director of the national health service of Austria, was a guest of Salem physicians in September. He is making a four months' tour of the United States under the auspices of the Commonwealth Foundation. While in Salem he inspected the work of the Marion County Child Health Demonstration.

Dr. Ben F. Roseman, formerly of Boston, Mass., has moved from Corvallis to Medford, where he will continue the practice of ophthalmology and otolaryngology.

Willamette Valley Medical Society, at a meeting at Corvallis Sept. 9, was addressed by Dr. Ira A. Manville, associate professor of physiology at the University of Oregon Medical School, and Dr. C. U. Moore, Portland pediatrician. Both speakers dealt with phases of the role of diet in relation to disease.

WASHINGTON

Internists Form Society. During the recent annual meeting of the Washington State Medical Association at Tacoma, physicians of the Northwest who are limiting their practice to internal medicine organized the North Pacific Society of Internal Medicine. The following officers were elected: President: Dr. Frederick Epplen, Spokane, Wash.; vice-president, Dr. Charles E. Sears, Portland, Ore.; secretary-treasurer, Dr. Lester J. Palmer, Seattle, Wash.; executive committee, Drs. Chas. E. Watts, Seattle; G. F. Strong, Vancouver, B. C.; W. B. Penney, Tacoma. Twenty physicians became charter members of the organization. It is planned to limit the membership to thirty-six internists.

Oppose Abuse of Free Clinics. At the annual meeting of public health officers of Washington, which was held at Tacoma, Aug. 29, universal opposition to the unrestricted patronage of county and city free clinics by persons of means was voiced by the members in attendance. The subject came up for discussion following a paper by Dr. L. D. Fricks, medical director of the federal department of health for Washington, who stated that he felt it was not a wise policy at the present time for public health officials to render treatment to citizens who were able to afford private care.

Attend Surgical Convention. Twelve physicians from Western Washington, who are members of the American College of Surgeons, left Sept. 28 via the Canadian Pacific Railway to attend the annual meeting of the association at Detroit, Oct. 3-6.

Clallam County Medical Society held its monthly meeting at Port Angeles Sept. 13. The organization accepted the plan offered by the Port Angeles Hospital Sanitarium which will afford members of the society staff privileges in the new hospital. Dr. Donald Black read a paper on the subject of "Bone Infections."

Health Commissioner Suffers Injury. Dr. E. T. Hanley, Seattle health commissioner, sustained a fracture of the arm Sept. 18, when the automobile in which he was driving was forced into a ditch by another machine. The accident occurred near Lake Kapowsin.

Dr. William J. Lightburne, formerly house surgeon at the Vancouver, B. C., General Hospital, has become associated in practice with Dr. W. S. Holton at Sedro-Woolley.

Dr. D. M. Strang has purchased the practice of Dr. W. G. Weddell at Kirkland. For the past ten years Dr. Strang has operated a surgical hospital at La Grande, Ore.

Dr. W. H. Orr has located for practice at Ronald.

Medical Weddings. Dr. Keith G. Burns of Seattle and Miss Madeline Willett of Atascadero, Calif., were married at Atascadero Sept. 12. Dr. Arthur Lewis, for the past year a member of the resident staff at the Seattle General Hospital, and Miss Nedra Wall of Seattle were married Sept. 10. Dr. Lewis has been appointed to take charge of a hospital at Scenic, Wash.

IDAHO

Plan Meeting in Yellowstone Park. At the annual convention of the Idaho State Medical Association, which took place recently at Twin Falls, it was determined to hold the 1928 session at Yellowstone Park in conjunction with the meeting of the state association of Montana and Wyoming. Officers of the Idaho association for 1928 were elected as follows: President, Dr. Alexander Barclay, Coeur d'Alene; president elect, Dr. H. P. Ross, Nampa; secretary, Dr. J. N. Davis, Kimberly; counsellor for the northern district, Dr. J. N. Alley, Lewiston.

Asylum Head Resigns. Dr. F. W. Mitchell, superintendent of Idaho Insane Asylum at Blackfoot since 1924, has resigned. He plans to devote his entire time to private practice in Blackfoot.

Dr. A. A. Newberry, of Filer, was operated upon for appendicitis at the county general hospital at that city Sept. 10.

Public Health Advisor Quits. Dr. Ralph M. Fouch of Boise, public health advisor of the department of public welfare, has tendered his resignation. He

Dr. Irvin Keller, formerly of Leadore, has moved to Nampa where he will engage in practice.

has announced that he will open a private hospital at Huntington, Ore.

Dr. P. N. Westfall, of Caldwell, suffered a severe infection of the hand and was removed to the Caldwell General Hospital Sept. 7. He is reported out of danger.

OBITUARIES

Dr. Samuel M. Strohecker, Portland, Ore., died Aug. 27, at St. Vincent's hospital, aged 58 years. He was stricken early in July while en route to the Orient and was rushed home on the first available steamer. He was born in 1869, and graduated from the University of Illinois College of Medicine, Chicago, in 1899. At the time of his death he was president of Portland City and County Medical Society.

Dr. Frank W. Wallace, Oregon City, Ore., died at the home of his parents at Nelson, B. C., Aug. 25, aged 27 years, following a brief illness. He was born at Spokane, Wash., in 1900, and graduated from McGill University Medical School, Montreal, Quebec, in 1923. In 1924 he was affiliated with the Rockefeller Foundation in New York. Since 1925 he had occupied the position of county and city physician at Oregon City.

Dr. Paul E. Weisel, Montesano, Wash., died suddenly of heart disease at his home Aug. 20, aged 51 years. He was born at Union, Mo., in 1876, and graduated from Denver and Gross College of Medicine, Denver, Colo., in 1906. He practiced at Garfield, Wash., for twenty years before moving to Montesano in 1926.

Psychic Factors in Course of Cardiac Disease. The psychic disorders that are initiated not only by real heart disease but also scarcely less by imagined disease are, according to Nellis B. Foster, New York (Journal A. M. A., Sept. 24, 1927), various and important. In concrete cases one finds at one extreme clearly defined examples of organic mental reaction due to cerebral congestion or anemia, or to toxic states resulting from cardiovascular failure, and at the other extreme a pathetic failure of adaptation due to personality or constitutional defects but not necessarily an inferiority complex. In severe states of cardiac insufficiency, sleep is disturbed and broken by periods of semiconsciousness. During this period some patients are subject to dreams in the sleeping period and hallucinations in wakeful interludes. These dreams and hallucinations are with each patient often a repetition of the same pattern of thought. Night after night he does the same thing in his dream and talks with the same imaginary person when awake with a wearisome iteration. During the day the mind may be clear and unclouded, and there is then adequate comprehension of the impossible nature of the hallucination that was so vivid a few hours before. This mental disturbance in cardiac disease has been remarked, and various speculations have been advanced for its explanation. It has been suggested that these psychic manifestations may be regarded as analogous to referred pains in organic disease, only that a different group of nerves is involved.

REPORTS OF SOCIETY MEETINGS

WASHINGTON STATE MEDICAL ASSOCIATION

MINUTES OF THE THIRTY-EIGHTH ANNUAL MEETING OF WASHINGTON STATE MEDICAL ASSOCIATION, HELD AT FIRST BAPTIST CHURCH, TACOMA, WASH., AUG. 29-31, 1927

The Thirty-eighth Annual Meeting of Washington State Medical Association was convened at First Baptist Church, Tacoma, Wash., Aug. 30, 1927.

August 30

MEETING OF THE BOARD OF TRUSTEES

The Board of Trustees was called to order by the President, Dr. H. G. Willard, at 9:00 a.m. On calling the roll a quorum was found to be present, the following trustees answering to their names: H. G. Willard, G. C. Miller, W. A. Taylor, C. H. Thomson, J. H. O'Shea, D. A. Nicholson, J. H. Whitacre, A. O. Loe, D. H. Houston, P. J. Gallagher, E. E. Hill, C. B. Ward, E. W. Janes, S. S. Oppenheimer, Frederick Epplen.

The minutes of the last meeting of the Board of Trustees were read and accepted.

The resolution in regard to the Defense Rates was laid on the table.

The appeal of Dr. J. Francis Hilton from the action of the Chelan County Society in refusing him membership was read. The Secretary stated that Dr. Hilton had been notified that his appeal would be heard at this time, and that he was not present. On motion the appeal was laid on the table.

Motion was made and adopted that all applications for Defense be passed upon by the Executive Committee.

The Trustees then adjourned to meet with the House of Delegates.

HOUSE OF DELEGATES

FIRST SESSION

The House of Delegates was called to order by the President at 9:30 a.m., Aug. 30. A quorum was present. In addition to the above mentioned Trustees the following delegates were present: Albert Lessing, Wm. H. Taylor, R. E. Windham, P. H. Brown, A. J. McIntyre, Roger Anderson, W. C. Woodward, H. E. Cleveland, Homer Dudley, B. T. King, C. E. Hagyard, L. Palmer, C. W. Knudson, A. Crookall, J. T. Dawson, O. H. Christoffersen, R. J. McCurdy, C. R. McCreery, W. B. Penney, W. D. Read, N. L. Thompson, F. S. Miller, A. E. Stuht, R. N. Hamblen, George Downs, J. T. Rooks, E. N. Layton, F. H. Brush, C. J. Lynch, Wm. A. Taylor.

Motion was adopted that the minutes of the last annual meeting be accepted as published.

The Secretary stated that it is customary to have the books examined by a certified public accountant on January 1 and July 1 of each year, and that there had been two audits since the last meeting, an abstract of which was printed in the program. On motion the audits were accepted as published.

The reports of all officers of standing committees were presented to the House as published in the program, and were adopted as published.

It was moved that a committee be appointed to draw up suitable resolutions for the deceased members. Seconded and adopted.

The President called for a report from the committee appointed for the purpose of deciding upon the disposition of $7,000 belonging to the State Association, which had been in Liberty bonds that have been called. The committee was composed of the following: Drs. W. McCreery, Chairman, S. S. Oppenheimer, and Casper Sharples. The Chairman reported that a decision had not been reached, and the matter was carried over until the next meeting.

The following motion was read to the House:

> Whereas, it is believed by the majority of physicians that properly aged whiskey is a distinct therapeutic entity; that no other therapeutic agent will meet certain emergencies so readily or effectively;
>
> Whereas, so vital is this agent in some emergencies that honorable and self-respecting physicians are forced on the one hand to break the existing bone-dry law of this State, or on the other hand, compelled to ignore the higher law of conscience in safeguarding the welfare of his patient; therefore be it
>
> Resolved, by the House of Delegates of the Washington State Medical Association, that it be recommended to the medical profession of Washington State, and the officers of the Association be instructed to respectfully petition the next State Legislature to so modify or amend the existing bone-dry law of this State and to take other necessary steps to bring to the physicians of this State the legal right to prescribe whiskey and other spirits for sick people needing the same; that this right be safeguarded from abuse by placing the safeguards of the Harrison Narcotic Law about it, or pass a similar statute for that purpose.

Dr. C. J. Lynch spoke in favor of the resolution.

It was moved that the resolution be referred to a committee appointed by the President, which would consider the matter and report back to the House. The following committee was appointed: Drs. C. E. Hagyard, Chairman, C. J. Lynch, and Elmer Hill.

The following resolution was introduced by Dr. W. D. Read:

> Resolved, that the President appoint a state-wide committee whose function it will be during the next few months to formulate and recommend for adoption at a subsequent meeting of the House of Delegates amendments to the By-Laws, providing for the formation of seven or more, or less, districts with trustees, whose function it will be to organize and represent their respective districts.

This resolution was laid on the table for one day.

The House of Delegates then adjourned to meet the following morning at 9:00 a.m.

SECOND SESSION

Wednesday, Aug. 31, 9 a.m.

A quorum being present, the meeting was called to order by the President.

It was moved that the House of Delegates endorse the movement of the State Board of Health in their state-wide Maternity Mortality Survey. Seconded and carried.

The resolution introduced by Dr. Read was read. After discussion it was moved that the committee appointed shall, before taking any action in the matter, confer with the legal representatives of this Association to find whether the carrying out of this action would infringe upon our Articles of Incorporation. Seconded and carried.

Dr. D. H. Houston presented a bill of $25 for the Championship Golf Trophy. It was moved that this bill be paid. Seconded and adopted.

A motion was made that the Secretary be permitted each year to purchase the annual trophy for the Washington State Medical Association. Seconded and adopted.

REPORT OF FINANCIAL COMMITTEE

Dr. W. McCreery, Chairman of the Financial Committee, gave the following report:

Your Committee recommends that the investment funds of the Washington State Medical Association be placed in the hands of the Secretary-Treasurer of the Association. He shall always be bonded for the full amount of the funds in his possession. He shall invest the funds under his care only in the highest grade bonds, such as the obligations of the United States and Canada, the obligations of the different states of this country or the provinces of Canada, underlying mortgages of Trunk Line Railroads or bonds of public utility companies and industrial corporations which are given a rating of AAA by such investors' services as Moody's. Generally speaking, investment of these funds should be limited to securities qualified for investment in Savings banks in the State of New York, Massachusetts and Connecticut. The Secretary-Treasurer shall make a yearly report of funds in his possession to the Board of Trustees.

It was moved that the report be adopted. Seconded and carried.

ELECTION OF OFFICERS

Seattle was selected as the next place of meeting. The House of Delegates then proceeded to elect officers for the ensuing year. (Those whose terms did not expire are added to complete the list.)

President, Dr. R. J. O'Shea, Seattle, term expires 1928.

First Vice-President, Dr. F. H. Brush, Yakima, term expires 1928.

Second Vice-President, Dr. N. L. Thompson, Everett, term expires 1928.

Secretary-Treasurer, Dr. C. H. Thomson, Seattle, term expires 1928.

Assistant Secretary-Treasurer, Dr. J. H. O'Shea, Spokane, term expires 1928.

Trustees: First District—Dr. D. A. Nicholson, Seattle, term expires 1928; Dr. H. J. Whitacre, Tacoma, term expires 1928; Dr. C. A. Hagyard, Seattle, term expires 1929; Dr. D. H. Houston, Seattle, term expires 1929. Second District—Dr. C. L. Smith, Spokane, term expires 1928; Dr. P. J. Gallagher, Spokane, term expires 1928; Dr. E. E. Hill, Walla Walla, term expires 1929; Dr. George Anderson, Spokane, term expires 1929.

Journal Trustees: Dr. George Dowling, Seattle, term expires 1928; Dr. E. W. Janes, Tacoma, term expires 1928; Dr. Mitchell Langworthy, Spokane, term expires 1928.

Delegates to A. M. A.: Dr. D. E. McGillivray, Port Angeles, term expires 1928; Dr. D. H. Palmer (alternate), Seattle, term expires 1928; Dr. Frederick Epplen, Spokane, term expires 1929; Dr. P. D. McCornack (alternate), Spokane, term expires 1929.

The House of Delegates adjourned sine die.

SCIENTIFIC PROGRAM

Monday, Aug. 29

8:00 a.m. Washington State Medical Association Golf Tournament at Tacoma Country Club.
3:00 to 5:00 p.m. (For members who do not play golf: Diagnostic Surgical Clinic, Tacoma General Hospital: Bone and Joint Surgery, Dean Lewis, Johns Hopkins University.
Diagnostic Pediatric Clinic, Tacoma General Hospital, J. B. Bilderback, Portland.

Tuesday, Aug. 30

7:00 to 9:00 a.m. Operative Clinics at St. Joseph and Tacoma General Hospitals.
9:00 to 10:00 a.m. House of Delegates and Board of Trustees Business Meeting.
9:30 a.m. (1) Blood Injections. C. Ulysses Moore, Portland.
(2) Dehydration Fever. Lyle A. Greenwood, Bellingham.
Discussion. P. D. McCornack, Spokane.
(3) Present Status of Scarlet Fever Control. George Dick, Rush Medical College.
12:00 to 2:00 p.m. Luncheon at Winthrop Hotel. Section Luncheons: Public Health League, North Pacific Pediatric Society.
2:00 p.m. (1) Surgical Pathology Covering Kidney and Bone. Dean Lewis, Johns Hopkins University.
(2) Treatment of Occiput Posterior Positions. Robert N. Hamblen, Spokane.
Discussion, J. Warren Bell, Everett.
(3) Symposium on Back Injuries: (a) Back Injuries with Some Observations on End Results. L. L. Goodnow, Aberdeen.
(b) Treatment of Back Injuries. Mitchell Langworthy, Spokane.
Discussion, H. T. Buckner, Seattle.

Wednesday, Aug. 31

7:00 to 9:00 a.m. Operative Clinics at Local Hospitals.
9:00 to 10:00 a.m. House of Delegates Business Meeting and Election of Officers.
10:00 a.m. (1) Treatment of Hemorrhoids. Arthur Crookall, Seattle.
Discussion, A. E. Gerheart, Wenatchee.
(2) Thoracic Tumors. C. R. Castlen, Seattle.
Discussion, J. P. Richardson, Ellensburg.
(3) The Larynx in Thyroid Diseases. A. B. Murphy, Everett.
Discussion, A. E. Codd, Spokane.
2:00 p.m. (1) Tissue Transplantation. Dean Lewis, Johns Hopkins University.
(2) Local Anesthesia in Major Surgery. E. N. Layton, Colfax.
Discussion, Robert D. Forbes, Seattle.
(3) Intermittent Duodenal Stenosis. Richard Hayes, Longview.
Discussion, C. J. Johannesson, Walla Walla.
7:00 p.m. Public Meeting, First Baptist Church.

KING COUNTY MEDICAL SOCIETY

Pres., A. T. Wanamaker; Secty., W. W. Bell

The meeting of September 12 was called to order at 8:15 p. m. by the President, Dr. A. T. Wanamaker. The minutes of the last preceding meeting were read and approved. Applications for membership of Drs. Inslee Blair Greene, E. G. Longley and Owen Taylor were read.

The program consisted of the dedication and presentation of the bust of Dr. Jas. B. Eagleson. Among the guests present was Mayor Landes, who, after being introduced by Dr. Wanamaker, gave a talk on "Dr. Eagleson as a Citizen." The Mayor spoke of the strength and success of a city, not as a whole, but dependent on the character of its citizens. The society was commended for presenting the bust of Dr. Eagleson while he was still here to personally receive the honor thus conferred.

Dr. Robert C. Coffey of Portland gave the address of the evening. After stating that he had never known a more fitting tribute, and referring to Dr. Eagleson as a "great and good man," he continued by stating that Sir William Osler contributed very little to the success of medicine, and yet he was considered the most outstanding physician of the day. Dr. Eagleson has contributed very little to the literature on the science of surgery, yet when surgical work is required by a doctor or his family, in this part of the country, he is the one most frequently chosen. The only criticism is that he has been too modest and has contributed little to surgical literature, but his entire time has been devoted to the public, in serving on committees and matters of public welfare, scientific societies and other organizations where his wise counsel is sought. During the war he was chosen as a leader in medical work in Seattle, being in charge of Base Hospital No. 50, and later served at the front in France. In this dedication the Northwest honors its best surgeon, and Seattle honors its greatest medical personality.

The Rev. Dr. Mark A. Matthews spoke on "Dr. Eagleson as a Church Member," and stated that it is impossible for a successful surgeon to be an atheist. Dr. Eagleson has never faltered nor failed in his duties as a Christian, but has always been ready and willing to discharge his duties to his fellowmen. He has always been a hard worker in the church, a gentleman, a scientist and a church man.

Dr. E. O. Jones spoke on "Dr. Eagleson as a Soldier." He gave months to the work of securing for the Pacific Northwest the equipment for a base hospital. His hours of labor were long, extending into the night, preparing for the influx of the wounded and sick into the hospital of which he was in charge. He was held in high esteem by all the members of Base Hospital No. 50.

Dr. A. H. Peacock, chairman of the committee, presented the bust.

Dr. E. Weldon Young gave the dedication address. He stated Dr. Eagleson has always been an outstanding figure and worthy of the admiration showered upon him during his life. He sketched his life before coming to Seattle, and mentioned his many activities in ths city. In behalf of the committee, the bust of Dr. Eagleson was presented to the society to serve as an inspiration to those who come, with the hope that Dr. Eagleson might long be with us.

The unveiling of the bust was by James Mills Eagleson, the grandson of Dr. Eagleson.

In responding, Dr. Eagleson stated that he considered this honor was not for the things which he had done, but more as an act of friendship from his fellowmen in the profession, and that he appreciated the bust being presented and dedicated during his lifetime, thus enabling him to view the beautiful piece of art. He related incidents of his youth. He stated that he came to Seattle in 1887, and has made this his home continuously since that time. Dr. Eagleson paid tribute to his mother for guidance and counsel in his early years, and to his wife, who has shared with him in his joys and sorrows for the past thirty-eight years, and given him of her counsel and help in times of need.

The Surgical Section of King County Medical Society met in the Medical and Dental Auditorium at 8 p. m. on Monday, September 19, 1927. Dr. H. T. Buckner presided. There were one hundred nineteen members present.

The report of the Hospital Survey Committee, to be presented by Dr. von Phul, was postponed because several members of the committee could not be present.

Miss Justina Hill, bacteriologist to Dr. Hugh Young of Johns Hopkins, presented the result of some unpublished experiments with mercurochrome. The favorable results which have followed its intravenous use in some eight hundred cases at Johns Hopkins have seemed to need other explanations than the germicidal action of the solution. To find the explanation for this action, the experimental work was undertaken. These experiments seem to prove conclusively that mercurochrome has an activating effect upon the blood serum, the exact nature of which is unknown, but is not due to its germicidal properties. Other experiments indicate that mercurochrome has a powerful indirect action which is potent in all types of infections.

In discussion, Dr. J. H. Jacobsen asked whether or not Miss Hill thought the aqueous solutions of mercurochrome were unstable, and if so, what was the length of time they were stable. Dr. von Phul inquired what the clinicians thought of the intravenous use of mercurochrome in blood stream infections with streptococcus viridans, accompanied by endocarditis. Dr. O. S. Nelson asked if Dr. Young employed mercurochrome for bladder irrigations, and whether there had been many cases of kidney irritation following the intravenous use of the drug.

In replying Miss Hill said that in two and five per cent aqueous solutions there was only a slight loss in potency, which could be neglected. The intravenous use of mercurochrome in blood stream infections associated with endocarditis is useless. Blood transfusions probably give the best results in these cases.

Dr. D. A. Murray presented a number of lantern slides, showing the similarity of the spinal curve in the infant and in four-footed animals. He traced the development of the dorsal and lumbar curves, and showed how the change in the intravertebral discs in the aged accounted for their loss in height. He then presented two reels of moving pictures, prepared by the Children's Bureau at Washington by Dr. Klein, on posture.

Pathological specimens from a case of general carcinomatosis were presented by Dr. C. F. Davidson. He said the section of the lumbar spine was cut out as easily with a knife as though it were cheese. The primary growth was in the right ovary.

Dr. Buckner said he had been in consultation on this case, and was unable to explain the relief of pain which followed the parathormone and calcium. He had seen much the same result in a similar case some months ago.

PIERCE COUNTY MEDICAL SOCIETY

Pres., E. C. Wheeler; Secty., W. B. Penney

The regular meeting of Pierce County Medical Society was held in its rooms, Tacoma, Wash., Sept. 13, 1927, Dr. E. C. Wheeler, President, presiding. Minutes of the previous meeting read and approved.

PROGRAM

An Insult to Childhood. This paper was read by Dr. C. V. Lundvick. He discussed the condition of squint in childhood and stated that one to two per cent of all children are affected and should be treated early, beginning at the end of the first year with glasses. Operation should be done if a cure is not effected in six months of treatment. The paper was discussed by Drs. D. H. Bell, A. E. Hillis, R. S. Miles, W. D. Read and J. A. Johnson.

Echoes of the Recent State Meeting. Dr. H. G. Willard gave an interesting resume of the scientific part of the recent state meeting.

BUSINESS

The transfer of Dr. C. E. Griffith from the Story County Medical Society of Iowa was accepted. Applications were read and referred to the Board of Trustees of Drs. S. A. Owens, A. J. Barter and C. C. Trimble.

After considerable discussion of the baby show in connection with the Puyallup fair, the following resolution was unanimously carried and a copy was ordered to be transmitted to the president of the fair:

> It is the sense of this society and we go on record as being opposed to a baby show being held in connection with the Western Washington Fair from the health standpoint; that all members of the society be notified and that they be discouraged from acting in an examining capacity.

PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

Pres., H. V. Wurdeman; Secty., M. J. Morris

The regular meeting of Puget Sound Academy of Ophthalmology and Oto-Laryngology was held Tuesday evening, September 21, 1927, at the Virginia Mason Hospital, Seattle, Wash., President Dr. H. V. Wurdeman presiding. Twenty members and two guests were present.

Dr. K. W. Amano exhibited a man, 46 years of age, with tumor of the larynx. The first symptom was hoarseness, six months ago. One month ago an abscessed gland of the neck was incised and drained. There has been no fever at any time. Wassermann plus three. Diagnosis, gumma of larynx.

Dr. H. V. Wurdeman presented a case of Mooren's ulcer which started two months ago in the right cornea which was never infected, but which progressed until it occupied almost the whole corneal surface. The ulceration has never involved the deep layers of the substantia propria of the cornea. There has been gradual healing until it now only occupies the center of the cornea and the cicatrization has been by clear tissue.

Dr. Wurdeman also showed a case of concomitant hypertropia alternans with torticollis. She has, at the age of 38 years, developed binocular vision after muscle operation.

The paper of the evening was read by Dr. Wurdeman, "The Revelation of Cupping of the Optic Disc to the Visual Fields in Glaucoma."

PUBLIC HEALTH LEAGUES

WASHINGTON

Dr. George Downs of Spokane was elected last month as the president of the Public Health League at its annual convention in Tacoma. The new president has been chairman of the eastern Washington branch of the organization for several years and has been an active officer. The post of executive chairman went to Dr. Arthur Crookall of Seattle, who was advanced to this position as a member of the executive committee. Other members of the executive committee selected are: Drs. S. E. Lambert, W. C. Lippincott, A. T. Wanamaker, J. T. Whitty, R. N. Hamblen, W. B. Penney and E. A. Rich. Dr. Walter Woodward of Seattle was chosen secretary-treasurer. The general officers chosen include Dr. George Dowling of Seattle as vice-president, with Drs. Edwin Janes, J. Reid Morrison, J. J. O'Leary, J. W. Henderson, M. J. Maguire, J. T. Rooks, P. J. Gallagher and W. A. Mitchell as vice-presidents of their various districts.

The newly elected president of the Washington State Medical Association, Dr. Richard J. O'Shea, is chairman of the board of trustees and will have the following with him in this group of officers: Drs. C. H. Thomson, H. G. Willard, J. B. Eagleson, S. L. Calbick, J. W. Straight, E. J. Widby, E. E. Maxey and W. T. Wooley. The advisory committee, recruited from the list of past presidents of the League, includes Drs. H. P. Marshall, George W. Swift, H. J. Whitacre, E. Weldon Young, Frederick Epplen and A. O. Loe.

Dr. C. F. Engels of Tacoma was reelected chairman of the expansion committee. Other officers on this committee are: Drs. Sydney MacLean, E. C. Yoder, C. E. Butts, Joseph Aspray, Roger Anderson, M. T. Dalton, A. H. Peacock, Charles Guthrie, Minard Allison, H. Y. Bell, D. T. Ford and Kirk Brown.

THE "TALK CAMPAIGN"

Using the civic survey cards as a basis of information, the League has just written to the medical members of the Rotary, Kiwanis, Lions and other luncheon clubs of the state, asking them to assist in establishing the twice-a-year health talks for their clubs. Each secretary of these organizations was circularized some time ago and was provided with the Speakers' Bureau list and asked to cooperate in a state-wide health educational program. The response was gratifying and many speakers have already been placed on such programs. However, if the campaign is to reach its highest usefulness, the aid of the medical members of these luncheon groups is required.

In the purpose of reaching the different units of the Parent-Teachers clubs of Washington, the speakers' list has been sent to the various officers over the state. In the 100 topics of health used by the volunteer army of 248 speakers, a large proportion of the talks are related to child health. It is hoped that a great number of speakers may be assigned to these very important groups.

MC FADDEN'S FLATS

The great muscle king of America, McFadden, has again spoken to the medical profession and to the health leaders of Washington through the mail with a plea for cooperation between scientific medicine and physical culture. But his desire for an added subscription list for his magazine has apparently gone flat. The letters which have been mailed in to him, many copies of which have been sent to the League office, are scorching. His less than one per cent theories and unbalanced health hobbies, with their danger, are too well known to justify any cooperation from those who are the "trustees of the people's health."

However, one gleam of light appears in his search for new subscribers. He now urges the annual physical examination from the family physician as a means of keeping well. Coming from McFadden, this is worth noting.

MEMBERSHIP DRIVE

Plans are being laid for a real membership drive in October. It is hoped that the rolls of the League will include some 200 physicians who are not at present contributing to its financial upkeep. The Committee on Public Health League Activities of the State Medical Association is to be enlarged by President O'Shea to carry a membership of 100. Dr. C. H. Thomson is chairman of this group.

Preceded by a series of luncheons, where League needs will be urged, it is planned to launch a state-wide membership effort on October 20. It is expected that these physicians will go in groups of three to visit nonmembers for the purpose of getting the League budget for the coming year cared for.

DR. ROBERT C. COFFEY CLINIC AND HOSPITAL

New brick and tile buildings have recently been constructed and equipped for the joint occupancy of the DR. ROBERT C. COFFEY CLINIC and the PORTLAND SURGICAL HOSPITAL. The facilities and privileges of the Hospital are limited to the practice of the Clinic and recognized specialists in Urology, Neurology, Cardiology and Internal Medicine who are acting as independent consultants to the Clinic.

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BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

PHYSICAL DIAGNOSIS. By Richard C. Cabot, M.D. Professor of Medicine in Harvard University. Formerly Chief of the West Medical Service at the Massachusetts General Hospital. Ninth Edition. Revised and Enlarged with six plates and 279 figures in the text. $5.00. William Wood and Co., New York, 1927.

To the reviewer's mind this is the best work on physical diagnosis because of the very simple and concise presentation of the subject and because almost all of the teaching, clinical rules and aphorisms laid down are based upon clinical findings which have been confirmed by autopsies. The method the author has pursued for years in presenting the clinical side of a case and then having the pathologist present the postmortem findings, and concluding the discussion by his own comments as an internist and those of the pathologist, have peculiarly prepared him for the preparation of this book. In addition there is no greater medical teacher than Cabot in this country or one who inspires his students with more intense enthusiasm. The book is now in its ninth edition which speaks for its great popularity. One of its chiefest virtues is its comparatively small size, owing to Cabot's capacity to single out the essential of a subject and not burden and confuse it with a host of comparatively unimportant points. To illustrate: Under ascites the commonest causes in order of their frequency are seven: (1) cardiac, renal or pericardial disease, (2) portal stasis, usually from cirrhosis of the liver, (3) tuberculous peritonitis, (4) cancer of the peritoneum, (5) intestinal obstruction, (6) acute hepatitis, (7) solid ovarian tumors.

Cabot's consideration of diseases of the heart has always appealed to the reviewer as being admirable from its simplicity of classification into five groups and these arranged according to age. Thus: (1) congenital malformations, (2) rheumatic, including valvular disease, weakened myocardium, acute and adherent pericarditis, in early life, (3) syphilitic, in middle age, (4) hypertensive, including arteriosclerotic and nephritic, in middle and advanced life, (5) goiter heart.

In his description of heart murmurs he has incorporated in this volume for the first time reference numbers in the text which correspond to the Gamble-Cabot cardiac diagnostic records, taken with the collaboration of the Western Electric Co. and the Columbia Phonograph Co. by Drs. Gamble and Cabot in 1926. These records illustrate normal heart sounds, accented and split heart sounds, systolic, middiastolic and early diastolic murmurs, auricular fibrillation and bigeminal rhythm. These records will be probably marketed this year by the Columbia Phonograph Co. and will afford for the first time a novel method of teaching.

Cabot's faculty for getting at the gist of matters is illustrated by his analysis of fevers. In 1000 cases of long continued fevers, 926, or 92.6 per cent, were due to typhoid, tuberculosis or sepsis. Therefore he draws the logical deduction that fevers lasting over two weeks in the temperate zone and without obvious cause are probably due to one of these causes. Under sepsis are included benign and malignant endocarditis, urinary and biliary infections, local inflammatory processes and generalized bacterial infections with or without a known portal of entry.

The statistical method is used throughout the book and the figures are drawn from the records of the Massachusetts General Hospital. Thus, 100 cases of enlarged spleen are analyzed. It is impossible to doubt such teaching based on statistics and confirmed by autopsies. In other words, the book is a presentation of medical facts like that other work of Cabot's, "Facts on the Heart." Altogether a most admirable book and a medical bible for the profession, for it cannot be read too much or too often.

WINSLOW.

MINERAL WATERS OF THE UNITED STATES AND AMERICAN SPAS. By William Edward Fitch, M.D., Member of the International Society of Medical Hydrology. Illustrated, 799 pp. $8.00. Lea & Febiger, Philadelphia and New York, 1927.

In this volume one will find complete information regarding mineral waters of this country. The author states that its object is to awaken the profession to a realization of the therapeutic value of our mineral waters in the treatment of chronic diseases. It describes four hundred twenty-five active spring areas with analyses of eight hundred seventy-one springs. The author presents the history, location, analysis, classification and therapeutic properties of all the active springs in the country. It is interesting to note that this includes five in Oregon, four in Washington and two in Idaho. The discovery of radium emanation from mineral waters is of sufficient importance to call for a chapter on radioactivity of mineral waters. A chapter is devoted to the great American spas, each one being illustrated and fully described. This is an authoritative work on the subject under consideration.

FISTULA OF THE ANUS AND RECTUM. By Charles J. Drueck, M. D., F. A. C. S., Professor of Rectal Diseases Post Graduate Hospital and Medical School, Chicago. With 66 Original Illustrations. 318 pp. F. A. Davis Company, Philadelphia, 1927.

The author states that this book is based on an experience of many years with a large number of individuals suffering with fistulae who were required to submit to more than one surgical operation, and even then some of them went on uncomfortably through life. He stresses conservatism as of great value in differentiating between an operator and a surgeon. The book contains chapters on symptoms, diagnosis, prognosis and treatment of fistula, due space being given to incision and excision. Different forms of fistula are discussed, as horseshoe, retrolabial, rectovaginal, rectourethral and rectovesical, a chapter being devoted to each of these. Accidents and complications as well as misfortunes following fistula operations are discussed. There is an abundance of original illustrations with roentgenograms portraying different conditions of this disease.

NORTHWEST MEDICINE

The Journal of the State Medical Associations of Oregon, Washington, Idaho and Pacific Northwest Medical Association

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ORIGINAL CONTRIBUTIONS

MATERNAL MORBIDITY AND MORTALITY*

Fred Lyman Adair, M.D.
MINNEAPOLIS, MINN.
Professor of Gynecology and Obstetrics
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The sickness, disability and death of mothers in connection with childbearing is of tremendous importance not only for reasons which affect the sentiments and emotions regarding mothers, but because of their economic, social, educational and moral importance to their families and the communities. The giving away or sacrificing of life in an attempt to save that of another always makes a strong appeal to the sentiment, especially if done under spectacular circumstances. Maternity is so common that it ceases to be spectacular, but it requires a great deal of physical and moral courage and sometimes involves the loss of the mother in securing a living child; at other times the death of the infant is the price paid to secure a living mother, and not rarely it happens that both lives are lost. A study of the morbidity and mortality not only of mothers, but also of fetuses and infants, in connection with the process of birth is always of importance. Any focusing of attention on these problems is bound to ultimately yield better results.

It is not so many years ago (1847) that Semmelweis of Vienna discovered and published to the doubting and critical world the source of puerperal fever. At that time fully ten per cent of the women entering the maternity hospital died of infection, and this is only about eighty years ago. He instituted the simple procedure of having the physicians, midwives and students wash their hands in chlorine water before examining women who were in labor. The maternal mortality immediately dropped from ten to one per cent. Prior to this (1845) Holmes read a paper in Boston on "The Contagiousness of Puerperal Fever." The opinions and proofs submitted by these men were not accepted, and were even ridiculed by many men who should have known better. It was not until the time of Lord Lister and the recognition of his teaching regarding antisepsis that "puerperal sepsis" was recognized as essentially a wound infection. He promulgated his ideas in 1865, while Professor of Surgery at Glasgow.

While the work of Oliver Wendell Holmes, Ignaz Semmelweis and Lord Lister was followed by such striking results from relatively simple procedures, it does not follow that we will be able in the future to secure any such striking results in the reduction of puerperal infection by some new but equally simple procedure. It is altogether improbable that we shall be able to accomplish any reduction in the type of puerperal infection known as wound infection by any other means than the most scrupulous attention to the details of asepsis and other obstetric technic. The purpose of this detailed care is, of course, to prevent at any time the introduction of any infectious material into or around the genital tract which might at some time in the future be responsible for the causation of any type of puerperal infection.

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* Read before Institute of Physicians, Salem, Ore., Aug. 30-31, 1927.

This type of infection, that is, the introduction of infectious agents from outside, is now spoken of as exogenous infection. It seems to be becoming recognized and more or less established that, in addition to this type of infection, there is a group in which the infection originates from the woman herself, and is known as endogenous infection. There are two possible sources of this type of infection; first, from pathogenic bacteria which are already present in the genital tract and which become virulent and active in association with the injuries due to childbirth; second, that disease-producing germs are carried from remote portions of the body, as for instance infected tonsils, through the blood stream to the genital tract, where they become localized and produce a kind of puerperal infection. It is well known that organisms may enter the blood stream and be carried to any portion of the body. This is well shown in the fact that we can recover in many disease conditions, such as typhoid fever, scarlet fever and septicemia, bacteria from the blood by means of blood cultures. It is also demonstrated by the fact that not infrequently we can culture bacteria from the urine, in which they seem to be eliminated through the kidneys.

Another problem of considerable importance in relation to puerperal infection is the varying resistance of different individuals to infection of different types. It is well known that the so-called immunity of different individuals to different diseases is not the same. Some are much more susceptible than others even in childhood to different diseases. It is well known that all children are not equally susceptible to such diseases as measles, scarlet fever, whooping cough, etc. Certain individuals in later life seem to be more susceptible to such diseases as pneumonia, influenza, typhoid fever, inflammatory rheumatism, etc. We are not at all sure of many of the factors which enter into the production of this immunity. It is not improbable that certain individuals are more susceptible to puerperal infection which, while it is not a specific disease, is more commonly due to some variety of streptococcus or the staphylococcus. Other organisms which frequently enter into these cases are the colon bacillus and the gonococcus. The nonpathogenic organisms known as saprophytes are also frequently

A great deal of work has been done in the attempt to find ways and means of immunization by
present.
creating either an active or passive immunity of individuals against various diseases, such as smallpox, typhoid fever, paratyphoid, diphtheria, scarlet fever, etc. It is quite possible that in the future we may be able to determine the individuals who are particularly susceptible to streptococcic, staphylococcic, and other infections, and that some means may be developed whereby we can increase their immunity to these infections and in this way reduce the puerperal mortality due to them.

In addition to puerperal mortality due to infection, we have a very large puerperal morbidity due to the same causes. It is very difficult to secure exact data regarding puerperal mortality, but it is infinitely more difficult to obtain equally exact data regarding puerperal morbidity. The disability and disease which result from infections occurring in connection with childbirth must be tremendous. The same methods of prevention should be used in reducing mortality which are carried out in lowering the mortality. In any community or institution the mortality and morbidity due to infection will doubtless go hand in hand and be due to the same causes. The results of infections in childbearing women who do not succumb to the infection are seen every day. These results consist of fever and prolonged illness following childbirth.

These infections involve chiefly and more frequently the breasts and the genitalia. Infections of the breasts interfere with the proper performance of their functions, lead to disability and sickness of the patient, complicate the feeding of the infant, lead to abscess formation in the breast, and may in some instances result in generalized infection. Infections of the genitalia may be localized in the external structures, may lead to ulcers, abscesses and breaking down of the tissues which were repaired at the time of childbirth. They may involve the internal genitalia with inflammation of the uterus, the tubes, ovaries, the surrounding structures and a peritonitis. We may have more or less generalized processes with metastatic abscesses in different portions of the body. These infections may lead to pulmonary and cardiac complications of greater or lesser severity. It is easily understood that women who have these infections may suffer very transitory disability, that they may have prolonged illnesses, with incomplete recoveries resulting in subsequent and permanent invalidism. Future operations may be required in order to correct in some measure the pathologic conditions which have resulted from these infections. Many women are rendered sterile as a result of infection, particularly those infections which involve the tubes and ovaries.

The net result of these infections is the morbidity resulting from the greater or lesser impairment of function, chiefly of the breasts and genitalia, more or less permanent disability and invalidism, and future operations performed in an effort to restore the individual to more or less good health though with definite impairment of function.

Just what percentage of operations performed on the female genitalia are done to correct conditions arising from infections and injuries at the time of childbirth it is difficult to say. Probably fifty per cent of such operations would not be an overestimate; the vast majority of these are done because of some infection which appeared in the puerperium.

Not all of the mortality and morbidity of mothers is due to infection, the next most frequent cause being the toxemias of pregnancy. There are at least two types of toxemias of pregnancy which cause a great deal of morbidity and considerable mortality. The first type occurs early in pregnancy, usually in the first trimester and consists of excessive vomiting. This is not such a frequent occurrence in its more serious form, and if taken early and treated actively usually causes only temporary morbidity and very slight mortality.

The other type is met much more frequently than the former. This usually occurs in the last trimester of pregnancy, being quite unusual prior to the sixth month. This is characterized mainly by high blood pressure, albuminuria and frequently edema. This is associated with a great deal of temporary disability and may result in permanent impairment of function of the heart, blood vessels and kidneys. It is often associated with convulsions and may result in coma and death. The emptying of the uterus seems to be the only certain and sure means of remedying this condition. In the past, and too frequently at the present time, this emptying of the uterus has been done hurriedly with a large percentage of cases showing more or less permanent morbidity and even mortality, due to injury, hemorrhage and infection which are sure to result in a high percentage of cases, where a rapid emptying of the uterus is performed.

The proper method of preventing this morbidity and mortality is by the early detection of this condition and careful and expectant treatment, associated with cautious and deliberate emptying of the uterus when indications for this procedure arise. It is true that occasionally one meets rapidly developing and fulminant cases of eclampsia which run a high blood pressure, with marked albuminuria, convulsions, and even coma within the course of a few days. Such cases must be handled with promptitude, and even then they not infrequently result in fatalities. The proper means of reducing the morbidity and mortality in connection with these diseases of pregnancy are by careful prenatal care, in order to detect the early signs of impending toxemia, by careful treatment and the institution of the necessary procedures at the proper time. This course would result in the prevention of many casualties for mothers, fetuses and infants.

Hemorrhages associated with pregnancy, parturition and the puerperium are not infrequent, and may cause very serious disability and not uncommonly result in the death of the patient. Not all of these hemorrhages are from preventable causes. The patient may survive the acute anemia arising from the hemorrhage to succumb later from an infection, to which she is made an easy prey in her weakened condition.

The principle causes of hemorrhage are: (1) abortion, whether it arises spontaneously or artificially, (2) ectopic pregnancy, (3) placenta previa, (4) separation or the premature detachment of the normally implanted placenta, (5) hemorrhage from lacerations and rupture of the uterus, (6) postpartum hemorrhage, and (7) miscellaneous conditions, such as tumors, benign and malignant.

The management of cases with hemorrhage naturally divides itself into preventive and curative measures. The prevention of hemorrhage in connection with abortions depends for its success largely on prophylaxis of abortions, and in the early recognition of the signs of an impending abortion. The prevention of abortion depends upon an understanding of their causes and in prompt treatment during the very early stages of the process. The causes of abortion are various. They may result from a failure of the embryo to develop normally. They may result from various diseases and conditions which exist in the mother. They may result from trauma, either intentional or unintentional. There is a very large group of intentional abortions which could easily be prevented, provided there was a proper viewpoint. This group of cases is often extremely serious from the standpoint of hemorrhage as well as from the introduction of infection, which often causes serious disability and a considerable mortality.

There is a considerable group of abortions in which the cause is difficult or impossible to determine. Some of these may be due to some endocrine disturbance. The early recognition of an impending or threatened abortion is extremely important in the prevention of hemorrhage. The early signs of such a process are backache, feeling of heaviness in the lower abdomen and pelvis, cramps in the lower abdomen, and any blood stained vaginal discharge. Whenever a woman who is pregnant presents these symptoms, the possibility of an abortion should be considered. The proper treatment is the immediate institution of complete body rest, and if the symptoms do not subside promptly, the administration of uterine sedatives, the most important of which are morphine and atropine. The proper management of cases of abortion is a very important item in any plan for the reduction of maternal morbidity and mortality, as a considerable number of these cases die, especially from infection.

Ectopic pregnancy is not, so far as we know, a preventable condition. The early diagnosis often presents considerable difficulty. It may frequently be confused with threatened or incomplete abortion, or with inflammatory diseases in the pelvis, or with an intrauterine pregnancy plus a tumor in the adnexal regions. The great danger to the mother in a tubal pregnancy is from a rupture with internal hemorrhage. The only successful treatment is surgical. Spontaneous cures may result, but the hazard is too great to warrant expectant treatment in a case where the diagnosis is clear. The great difficulty is to be able to make a positive diagnosis before rupture occurs. If this rupture takes place, surgical measures should be taken as soon as the patient has overcome the initial shock. The essentials of the surgical treatment are the removal of the pregnancy and control of the hemorrhage by ligation of the bleeding vessels.

Placenta previa is not infrequent. Bleeding from the genital tract, when it occurs in the later months of pregnancy unassociated with labor pains, is quite characteristic. The occurrence of genital bleeding in association with uterine pains does not exclude placenta previa. The condition should be recognized, and the patient closely supervised either in an institution, or by constant nursing and medical supervision in the home. In some cases expectant treatment may be utilized, but in others it is ill-advised. The active treatment consists of the induction of labor by rupture of the membranes or the insertion of a bag. Under favorable circumstances and in properly selected cases cesarean section is indicated. These cases not only succumb to the hemorrhage, but may later die of infection to which they are not uncommonly subjected.

Premature detachment of the placenta is a very serious condition, leading not infrequently to maternal and usually to fetal death. It occurs more commonly in cases presenting signs of toxemia of pregnancy, but may result from trauma and unexplained causes. The concealed type of hemorrhage is more serious and less easily recognized. Active treatment is usually indicated, and consists of emptying the uterus, especially in the less serious type of case and where facilities are not available for other methods of treatment. The emptying of the uterus may better be preceded by firm vaginal tamponade and tight abdominal binder. Where proper facilities are available, and the case can be placed in an institution, cesarean section and possibly hysterectomy may be necessary. Neither of the above conditions, that is, placenta previa or abruptio placentæ, are preventable conditions, and the best results can be secured only by prompt recognition, together with the institution of appropriate management.

Hemorrhages which result from injuries to the cervix or uterus are at least in some degree preventable. This is accomplished by proper management during labor, and the avoidance of inopportune and unnecessary interference during labor by means of versions and forceps operations. It is also necessary to avoid the undue prolongation of labor in cases where disproportion or malposition interfere with the carrying out of the normal mechanism of labor. When these calamities occur, the best hope for recovery is offered by a prompt recognition and treatment of these lacerations and injuries in appropriate surroundings. The treatment may require surgical intervention by means of major operations, but these procedures should be carried out promptly, under as advantageous conditions as possible.

Postpartum hemorrhage which is not due to extensive lacerations is often a preventable condition. It may be prevented by avoiding exhaustion from prolonged labor and from atony of the uterus due to profound or long continued anesthesia. It may be prevented by the proper management of the third stage of labor, and the avoidance of attempt to hurry this stage by prematurely and forcibly expressing the placenta. The normal mechanism of the third stage should be allowed to proceed naturally without undue interference. The control of the hemorrhage may be accomplished by the use of pituitrin, ergot, hot enemata of coffee, of hot water or normal saline. Hot intrauterine douches and uterine packing may be necessary in individual cases, but precautions should be used to prevent the introduction of any infection by means of the douche or packing. There is little satisfaction in controlling the hemorrhage and later have the woman die of infection. In some cases of postpartum hemorrhage the placenta still remains in utero. The removal of the afterbirth should be accomplished by manual removal of the placenta if necessary. It should, however, always be remembered that manual removal of the placenta is among the most serious of obstetric operations.

Tumors of the uterus may cause bleeding during pregnancy, labor or the puerperium. If one has not made the diagnosis of a tumor prior to the onset of genital bleeding, it should always be made with the onset of the bleeding. It may be trivial, as from a cervical polyp; or of the utmost seriousness, as in cases of carcinoma of the cervix. The exact condition which is present must be determined, and the appropriate treatment instituted. The management of such cases should be determined during the prenatal period so that the patient may receive the best of care, in a hospital if necessary.

Recently there has appeared a publication from the Children's Bureau, United States Department of Labor, Bureau publication number 158, by Robert Morse Woodbury, the complete title of which is "Maternal Mortality; the Risk of Death in Childbirth and from all Diseases Caused by Pregnancy and Confinement." Dr. Woodbury has made an extensive statistical study and analysis of factors entering into puerperal mortality. He has brought together the available statistical material of this country and of foreign countries. He considers the high mortality rates in the United States, and finds that they are among the highest in the civilized world, and that there has been but a slight decrease in these rates since the beginning of the present century.

The significance of these facts is of national importance, due to the loss of the lives of many women who are in their prime, and the associated loss of infant lives. The author states that a considerable proportion of infant deaths under one year of age occur during the first month of life, and approximately 100,000 infants die annually under one month of age. He also states that about 100,000 stillbirths occur annually, and concludes that the same measures that should be instituted to save the lives of mothers will also contribute toward the saving of these fetal lives. The author states the annual number of maternal deaths on the basis of the 1921 birth-registration area to be 18,281. He thinks probably that the error in these cases is about 12 per cent, which would make the actual number nearer 20,000 women. The maternal mortality rate for 1921 was 6.8 per 1,000 live births, and the provisional rate for 1924 was 6.6. The trend of the maternal mortality rate since 1900 shows an increase from 13.3 per 100,000 population in 1900 to 16.9 in 1921.

The comparison with other countries shows that the United States ranks with those having the highest rates, such as New Zealand and Chile. Among the countries having less than half of this rate are Denmark, Finland, Italy, Japan, the Netherlands, Norway, Sweden and Uruguay. The author also considers the causes of maternal mortality. He considers the economic factors, compares the city and country rates, and concludes that maternal mortality is largely preventable.

He makes certain recommendations for the prevention of maternal mortality and outlines the following preventive program:

1. Regulation of the practice of obstetrics, by requiring a license to practice from both physicians and midwives, by establishing minimum requirements for obtaining such a license, and by defining the prescribing penalties for malpractice.

2. Regulation of public and private hospitals and maternity homes through legal provisions governing the establishment of such institutions and requiring that they be licensed and subject to inspection.

3. Legislation for the control of venereal diseases, including the making of these diseases reportable.

4. Requiring that puerperal septicemia be made reportable, as is now the case in a number of states.

5. Provision through governmental or public sources of better facilities for training medical and nursing personnel and more adequate clinics, hospitals and maternity homes.

6. Subsidies in aid of state or local activities by Federal or State governments, as in the United States during the past four years through the Maternity and Infancy Act.

7. Educational work directed toward informing mothers of the need of adequate maternity care.

The question of the notification of cases of puerperal septicemia is one to be seriously considered. It is questionable whether or not such notification would accomplish any results which are worth the effort.

Dr. Mosher in a recent paper presents the following opinions:

Current American literature contains practically no expression of opinion in regard to compulsory notification of puerperal septicemia. No conclusive report on the working of the law was elicited by inquiries sent to boards of health in the states requiring notification. Questionnaires sent to officers of national medical and other interested organizations and a number of leading obstetricians and teachers in medical schools brought replies stating more or less definite opinions and furnishing information in regard to the situation. The gist of sixteen replies from obstetricians, of five from state executives, and of one from a city executive is given. The opinions for and against compulsory notification and the exacting of a penalty are almost evenly divided, so far as definitely expressed. It is concluded that, if notification is to be required, the working of the law should be considered with regard to the varied conditions that may cause pyrexia.

The two main weapons for reducing the mortality due to puerperal septicemia, according to Dr. Mosher, are:

1. Education. The prospective obstetricians who now are in the schools and hospitals must be taught the fundamental principles of asepsis; and prospective mothers must learn to demand good care. When women realize that childbearing can be made safer, a powerful public sentiment will be aroused that can be utilized in reducing puerperal mortality.

2. Publicity. This affects the general practitioners now doing obstetric work and treating all sorts of suppurating wounds, erysipelas, and other virulent infections, and rushing from the case with temperature to the clean maternity patient and seldom changing their clothes or using sterile gloves in the delivery. Publicity furnishes the only means of impressing upon these men that a woman dying from puerperal septicemia after such needless exposure is doubtless a victim of carelessness or ignorance. It is not to be argued that compulsory notification will in itself achieve anything marvelous, and a punitive clause may not aid greatly. Nevertheless, the publicity coming from notification would make the physician, who now scorns the extraprecautions urged for the lying-in patient, realize that to continue work in his community he must change his tactics, even if no other penalty is to follow.

Every available means must be used to reduce puerperal sepsis, whether or not we resolve that it should be made reportable. We must urge the medical schools to give due place in the curriculum to prenatal care, to management of normal labor, and especially to asepsis. We should institute, further, a campaign of education through State Boards of Health, state and county medical societies, health centers, and lay organizations having as their aim better maternity conditions.

The Woman's Hospital in the State of New York, report for the year ending December 1, 1926, states that among 1,349 obstetric cases the mortality of the mothers was 0.6 per cent.

The report of the Edinburgh Maternity Hospital for 1926 states that maternal mortality among 1,889 hospital patients was 1.8 per cent, and of 1,703 patients actually delivered in the hospital the mortality was 1.3 per cent.

In Minneapolis from 1912 to 1926, inclusive, there has been a total of 116,080 living births, with a maternal mortality of 800. The ratio of maternal deaths per 1,000 living births for this period is 6.8. At the Minneapolis General Hospital Maternity Service, during the years 1923, 1924, 1925, 1926, and the first six months of 1927, there was a total of 25 maternal deaths, of which 17 were due to puerperal sepsis. During this period there were 5,455 deliveries, a rate of 4.6.

Foreign literature contains frequent articles relative to maternal mortality. It may be of interest to quote from the article of Dr. Sison regarding maternal mortality among the Filipinos. The data for this work were taken by Dr. Sison from the annual report of the Bureau of Health and from the Philippine General Hospital records for the years 1914 to 1923, inclusive. He confines himself to the statistics pertaining to the city of Manila in the belief that the mortality data for this city are more accurate and complete.

In the ten year period, of 651,132 women exposed, 719 died of conditions due to the puerperal state. This corresponds to a death rate of 110.4 per 100,000. Of these 719 deaths, 283, 39.36 per cent, were due to septicemia, and 241, 33.51 per cent, to puerperal hemorrhage. This rate of 72.87 per cent is excessively high. The mortality rate of puerperal hemorrhage is exceedingly high and out of proportion to the mortality of the other puerperal conditions.

Sison gives the following predisposing causes of this state of affairs: (a) The faulty position the Filipino frequently assumes while at rest; (b) the inadequate care of pregnancy, labor, and especially of the puerperium; (c) the frequency of malnutrition on account of insufficient and faulty diet and lack of outdoor exercise; (d) frequent succession of pregnancies; (e) violent efforts to express the placenta before its complete separation; (f) tardy institution of proper treatment by an expert. Only 25.19 per cent of the deliveries are assisted by a physician, 19.94 per cent by midwives, and the rest by the family. Sison feels that better training of physicians in obstetrics is needed so that they may practice it with the ultimate view not only of delivering the child safely, but also of carrying and guiding the mother through all the stages of pregnancy, labor, and the puerperium with the least trace, recent or remote, of her enervating experience, back to normal health, and that the masses should be educated in the necessity for prenatal and postnatal care, in the rudiments of asepsis, and the dangers of being assisted by ignorant persons or by half-taught, unscrupulous professionals.

There is a great deal in the British literature, and the British Medical Association has taken an active interest in the study of puerperal mortality and morbidity, as is shown by the following abstract from an article by Sir Ewen Maclean, who is chairman of the Puerperal Morbidity and Mortality Committee of the British Medical Association. He presented some remarks on the interim report of this committee before the Monmouthshire Division of the Association. He believes that a zealous application of the knowledge we already possess by those who practice midwifery would result in striking improvement. It is, in his opinion, also true that until we acquire further knowledge there will remain a mortality rate sufficiently large to cause concern. "It was this consideration, I think, which led the Puerperal Morbidity and Mortality Committee of the Association to submit to the Council a recommendation urging that provision should be made for investigation into the factors which constitute and the conditions which vary resistance to disease, particularly as regards pregnancy and the puerperium."

Recognizing that a community can within limits determine its own death-rate, it is necessary to expend considerable sums of money to secure the necessary institutions, equipment and personnel to secure a lasting improvement in maternal morbidity and mortality. It is difficult and expensive to secure and maintain genuine and sustained interest of the public in these health matters. It took many years to convince the profession and public of the necessity for the Midwives Act. The voluntary support of institutions, as hospitals, blinded governments to the necessity of providing money for institutions for research and for the care of the sick. A beginning has been made in the establishment of the Medical Research Council.

Antenatal care is becoming recognized as reducing some of the ills and accidents of childbirth, but it is necessary to have proper provision for natal care in homes and institutions in order to properly "carry through." Dr. Maclean states that the absence of this principle is the greatest handicap to the proper notification of puerperal fever, which is essential to the success of the attack upon the largest single factor in puerperal morbidity. It is difficult to decide whether notification shall apply to (a) cases in which diagnosis of puerperal infection may be presumed to have been established, or (b) all cases of sustained puerperal pyrexia. The British Medical Association has taken the matter in hand as one of profound importance.

It is gratifying to observe the many signs that the Interim Report has aroused the deep interest of the Divisions and Branches. Quoting from Dr. Maclean's article, "The Divisional replies to the questionary will be analysed by the Committee, and before a further report, with recommendations, is submitted to the Council, the Committee hopes to have the great advantage of conferring with representatives of the Ministry of Health, the Medical Research Council, the Obstetrical and Gynecological Section of the Royal Society of Medicine, the Society of Medical Officers of Health and the Central Midwives Board, to which bodies the Council will issue invitations. The report and recommendation will in due course come before the Representative Body after consideration by the Divisions."

Dr. Louise McIlroy has presented some interesting material regarding the interim report of the British Medical Association on Causation of Puerperal Morbidity and Mortality. She states that in 1923 there were 758,131 living births, with 2,892 maternal deaths, or 3.81 per 1000. Puerperal sepsis caused about one-third of these, and eclampsia one-ninth. Deaths from other causes amounted to 1,552, or about 2 per 1000. She believes that the reduction of the infant mortality rate from 154 in 1900 to 77 in 1922 was due in no small measure to improved obstetric practice. She is of the opinion that there was definite evidence of wastage of infant lives, but that no such evidence exists regarding preventable wastage in maternal lives. Mortality statistics do not tell us of the suffering and disability which result from maternal morbidity. She recognizes that maternal morbidity and mortality are largely influenced by bad housing and economic or industrial conditions. In this presentation she limits herself to medical points of importance.

1. Extension of ante- and postnatal work is the most effective means of improvement. Antenatal and postnatal clinics should not be confused with child welfare and should be staffed by practitioners experienced in obstetrics.

2. There is room for much improvement in education. There must be facilities for postgraduate training of young practitioners and for refresher courses for older ones. We do not want more lectures, but facilities for clinical work and the actual handling of patients under the supervision of competent teachers. It is necessary also to provide for the education and training of midwives, who make 60 per cent of the deliveries of the country.

3. The provision of more beds for abnormal cases and for women who desire institutional accommodation, owing to housing difficulties. The material thus provided could be utilized for educational purposes.

4. Sepsis, though a notifiable disease, has not a workable definition. We know that it may be contagious and exogenous, and may be largely avoided by cleanliness. We are satisfied that it is also endogenous, but do not know how it arises. Facilities for research are necessary, especially directed toward immunity and the defensive nature of the bacteria of the genital tract.

5. The existing organization of midwifery is chaotic. Panels of medical practitioners specially experienced in midwifery should be set up and midwives should call those members on these panels. The antenatal and other clinics should be coordinated. Cases of death in childbirth should be investigated. Cases of sepsis should be treated in open air isolation wards of maternity hospitals.

The United States, through the Children's Bureau, is taking an interest in maternal mortality, and the following abstracts are taken from a few of the papers presented in the Fourth Annual Conference of the State Directors held in January 1927.

Jane C. Allen: Maternity and infancy work is frequently carried to the lonelier rural sections, where such care would otherwise be negligible or lacking. The increasing importance of the work to public health nurses and to the community is being shown in various ways, by meetings, in current literature and educational institutions. There is a growing conviction that proper supervision is the very hub of the whole wheel. Supervision entails certain obstacles and must accomplish certain ends: (1) The nurse is apt to resent it; the supervision must be tactful; it must secure cooperation; (2) it must be effective, requiring a complete grasp of details without obtrusiveness; (3) it must bring the small units up to the same standard and coordinate with the work of larger units; (4) it must be educational.

Dr. Ralph W. Lobenstine: The problem of providing expectant mothers in small towns and in rural communities with reasonable safeguards during pregnancy and labor is one that is surrounded, on the whole, with more difficulties than are encountered in urban communities. Some years ago a demonstration was undertaken in Tioga County, New York, to adapt the methods of the Maternity Center Association to rural communities. The State Health Department agreed to furnish the funds necessary to carry on a maternity nursing service by nurses from the Maternity Center Staff. Prenatal clinics were opened the last week in January, in 1925, after enlisting the sympathy and interest of the county medical profession. By the latter part of the year, four nurses were working in the demonstration. By the end of the first year 247, or more than half of the pregnant women of the county, had been under the nurses' care; 63 per cent of these women were referred by physicians. The nurses made 3020 home visits and attended 58 deliveries. In 1926 there were 253 new patients, of whom about 53 per cent were referred by physicians. During this year the nurses attended 111 deliveries. In 1926 the nurses made 3,293 home visits. There were no maternal deaths among the cases cared for by the nurses during either year.

The special committee of the Children's Bureau, under the chairmanship of Dr. Robert L. DeNormandie, has worked out a special plan and schedule for the study of maternal mortality. The first page of the schedule gives information derived from the birth and death certificates. The second page tabulates the care received during pregnancy, parturition and the puerperium. Pages three and four are taken up with the causes of death as found in the death certificate and a classification according to the International Classification. This standard schedule can be used for studies of maternal mortality to be conducted by state boards of health, medical societies, and those trained in investigation and obstetrics. A study of this kind should bring out facts which would be comparable for different sections and countries and might serve as a basis for accurate knowledge, on which possible improvement in obstetric practice could be based. The results of prenatal, natal and postnatal care could be analyzed. The results of home and institutional care could be compared. The results in different environmental conditions could be studied.

It is apparent that maternal morbidity and mortality still present problems which have not been solved. It is obvious that it is necessary to have a wider use of the knowledge which we already possess. It is true that new facts remain to be discovered and that after they become established it will be necessary to have them generally recognized and commonly practiced.

It is the best ultimate solution which should be kept in mind in the application of our present knowledge as well as in the application of new remedies. Those methods should be used which will finally work into the ideal scheme and none should be adopted which will tend to postpone or thwart the ultimate ideal of the best service to the mothers and infants.

It is known that maternal morbidity and mortality are in the main due to causes which are theoretically possible of control by the application of the proper measures. At the present time these consist of the scrupulous use of preventive measures and of methods for the early recognition of conditions which cause casualties.

There should be a widespread utilization of these methods of recognition and prevention and a general application of the remedies.

New facts and methods should be continuously sought and when established, but not until then, they must be generally known and applied.

It must be understood that the question of maternal morbidity and mortality presents not only medical and nursing problems but also social and economic difficulties, the solution of which is of the greatest importance, not only to the individual and family but also to the community as a whole.

The solving of these problems does not lie with any one group but they must be worked out by the study and cooperation of all those who are concerned. It is only in this way that the best ultimate solution can be attained and the best results secured for the mothers, infants and the public which is and should be vitally interested in these matters pertaining to the health and lives of its mothers and offspring.

TOXEMIA OF THE LATER MONTHS OF PREGNANCY

ITS PROPHYLAXIS AND TREATMENT*

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Statistics from the Children's Bureau, U. S. Department of Labor, show that the maternal death-rate in this country in 1925 was approximately 6.9 for each 1000 infants alive at birth.[16] Puerperal albuminuria and convulsions, to which the term eclampsia is applied, caused the death of about 4,300 pregnant women or approximately 27 per cent of the total deaths from childbirth. This high death-rate obtains in spite of attempts on the part of medical educators, medical and obstetric societies, and legislators to raise the standard of obstetrics and to educate the laity concerning the importance of prenatal care. These figures justify further discussion of the toxemia occurring in the later months of pregnancy, even though in the last few years a number of articles have appeared in the literature dealing with theories of etiology and of chemical changes in the blood, and summing up the experiences of various observers with various forms of treatment.

The term eclampsia as commonly used embraces the toxemias of the later months of pregnancy that are characterized by high or rising blood pressure, albuminuria, edema and rapid gain in weight, often associated with progressive symptoms of headache, dizziness, disturbances of vision and finally convulsions. In cases of so-called true eclampsia pathologic changes in the liver predominate at necropsy, often with capillary hemorrhage and edema of the brain and lungs, and renal involvement of varying degree. However, acute or chronic nephropathy, particularly the former, may present symptoms which render the clinical differentiation difficult or impossible.

It is not my purpose in this paper to deal with the theories of the etiology or pathology of the disease nor to enter into an extensive discussion of the various types of toxemia. However, from the standpoint of the future health of the patient and the safety of future pregnancies, a classification of the toxemias occurring in the later months is of value.

In a group of cases, in which renal injury had occurred during pregnancy, it was found that the nephropathy of pregnancy could be classified accord-

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ing to Volhard's outline of nephritis. By prefixing true eclampsia, the group in which the symptoms are associated with little or no evidence of renal injury, and adding pyelonephritis, we have the following usable classification of the toxemias of pregnancy:

- A. Eclampsia
- B. Nephritides
  - 1. Acute nephritis
    - a. Acute glomerulonephritis
    - b. Acute nephrosis
  - 2. Chronic nephritis
    - a. Chronic glomerulonephritis
    - b. Chronic nephrosis
    - c. Chronic focal nephritis
- C. Vascular lesions
  - 1. Benign hypertension
  - 2. Malignant hypertension
- D. Pyelitis
  Pyelonephritis

Pyelitis and pyelonephritis, strictly speaking, do not come within the scope of this discussion. In the remaining groups, we are concerned chiefly with the acute conditions.

It is important to visualize acute toxemia as a generalized disease, affecting not only the liver but other organs as well and possibly as a general capillary change, the result of a toxin or toxins whose nature is at present unknown. Capillaroscopy has demonstrated identical changes in the nail-fold capillaries in true eclampsia and in the acute nephritis of pregnancy. Frequently symptoms of toxemia arising during the course of pregnancy are due to exacerbations of preexisting chronic nephritis rather than to acute toxemia. It is not always possible to differentiate acute from chronic toxemia, especially if the patient is first seen in an advanced stage of the disease or in convulsions. In fact, so far as treatment for the purpose of relieving the alarming symptoms is concerned, differential diagnosis is not important. However, as the course of exacerbation of chronic nephritis usually differs from that of acute toxemia, it is important to differentiate these conditions when the first symptoms develop and before they have become serious.

It has long been recognized that exacerbations of chronic nephritis during pregnancy usually results in the earlier development of severe symptoms and often by the death of the fetus without the mother having convulsions. It is agreed that there is little change in the chemical constituents of the blood with acute toxemia aside from retention of chloride in the presence of edema and relative acidosis, as evidenced by low carbon dioxide combining power when convulsions impend. In the chronic nephritides, however, there is usually increased retention of nonprotein nitrogen in the blood, the specific gravity of the urine is more or less fixed, and renal function is lowered. From the standpoint of differential diagnosis and prognosis, the chronic nephritides present problems beyond the scope of this paper.

The treatment of acute toxemia of the later months of pregnancy is divided into prophylactic or prenatal and general, special and surgical. Much has been written concerning the value of the former. The morbidity and mortality of the disease show that propaganda for prenatal care has certainly not been overemphasized. It has been suggested that such toxemia is more common in the short, stocky, heavy-boned type of individual. If so, this type should be observed all the more carefully. It is undisputed that toxemia occurs more frequently in the first pregnancy. Talbot believes that it is the result of infection and urges removal of all foci before pregnancy, between pregnancies, or early in pregnancy. Foci may be removed during pregnancy, and this is usually advisable before pregnancy is far advanced in the case of abscessed teeth and definitely infected tonsils.

The advice which should be given to the pregnant woman seems so simple that the busy physician may fail to give it or may fail to emphasize it. Many of the patients who came the Clinic in the last five years with preeclamptic toxemia, and all of those with well developed eclampsia, had had little if any prenatal care. Most of the patients had consulted their family physician, many had failed to follow his advice, and all too frequently he did not insist that they should return at stated intervals for observation.

It is hardly necessary to say that the first requisite of prenatal care is complete general examination, including measurement of the pelvis, examination of teeth and tonsils for possible foci of infection, estimation of the hemoglobin, a count of the red and white blood cells, and the Wassermann test. If the patient gives a history of toxemia or if edema or albuminuria is found, tests of renal function should be made. The blood pressure and weight should be recorded at each examination. If patients gain too much weight during pregnancy, symptoms of toxemia are prone to develop. Randall showed a definite rapid rise in the plotted curve of gain in weight in cases in which toxemia developed in comparison with the more gradual rise in the curve of gain in weight in the normal case of pregnancy.

A general diet is advised, containing plenty of fruit and green vegetables, some milk and carbohydrates, a somewhat reduced amount of protein and fat, and a minimum of salt and spice. The diet should be regulated so as to limit the gain in weight to not more than twenty or twenty-five pounds during pregnancy. The patient is advised to continue her usual household duties with the avoidance of heavy lifting, and to take moderate exercise out of doors, preferably walking. She is advised to drink from six to eight glasses of water daily and to evacuate the bowels daily. She is warned to report to her physician the presence of edema, of disturbed vision, dizziness, or unusual headaches. She is examined at least once a month up to the seventh month and then every two weeks or oftener if necessary.

If the importance of the foregoing regimen is impressed on the pregnant woman and she follows it, fewer cases of toxemia will develop. Regular examination will usually enable the physician to detect early the symptoms of the toxemia which develop in spite of care. The condition may be manifested at first only by a slight rise in blood pressure with an undue gain in weight and only slight albuminuria. Intelligent advice concerning diet, elimination and rest, and careful supervision given to the patient after early symptoms have appeared, undoubtedly play a significant part in lessening the incidence of eclampsia.

If in spite of care the ambulatory patient grows worse, she should be put to bed, preferably in a hospital. The blood should be examined for the carbon dioxide combining power to determine the presence or absence of acidosis, for the estimation of blood chlorides if the patient is edematous, and for the nonprotein nitrogen partition to determine whether there is retention of urea. Examination of the fundi is also of value, particularly in revealing evidence of previous nephritis. Treatment will depend on the character and severity of the symptoms and the rapidity with which they progress. The patient should be kept in bed on a diet, containing approximately 1500 calories with a low protein content (about 50 gm.), and a minimum of salt. If edema has developed, the daily fluid intake should be limited to from 800 to 1000 c.c. until the edema has markedly lessened or has disappeared. There are various conflicting diets. Pinard advised milk only, but milk will give too much protein, if sufficient amounts are given to keep up nutrition. Tweedy advised starvation, and the intake of a large quantity of water and free catharsis. However, it seems more rational to keep up the patient's strength and nutrition by a fair amount of food, low in protein and in salt and water, until the tissues are freed from excess of fluid.

In considering elimination the importance of catharsis is evident; its selection may be left to the preference of the physician. Late in pregnancy, castor oil and magnesium sulphate are most frequently used. It should be remembered, however, that edema is rarely eliminated by catharsis alone and that the patient may be greatly weakened by too much catharsis. Wieloch noted in cases of preeclampsia and eclampsia that the degree of edema usually corresponded to the severity of the disease. He believed this to be due to injury of the capillary endothelium; that the cerebral edema by its pressure causes headache and associated symptoms, and that the hypertension is the defensive mechanism of the system to overcome intracranial pressure and to supply the brain with blood. Clinical observation has shown that the lessening of edema is usually accompanied by lowered blood pressure and improvement in the symptoms of toxemia.

It has been demonstrated that edema usually disappears following diuresis. McNeile and Vruwink have noted this, following one or more intravenous injections of 20 c.c. of a 10 per cent solution of magnesium sulphate, and I have noted it following large doses (up to 10 gm. daily) of ammonium chloride by mouth. If the blood urea is distinctly raised or if the carbon dioxide combining power is markedly reduced, these drugs should be used with caution. The preeclamptic patients with edema under our care have practically all improved following such treatment. None had convulsions and most of them were carried to the normal termination of pregnancy. Fortunately, in most instances the pregnancy can be carried to the time when the fetus is viable so, if it becomes necessary to induce labor, there is usually a fair chance that the child will survive.

Eclamptic convulsions present an emergency requiring immediate and special treatment. It is obviously necessary to attempt to control convulsions, whether they occur before, during or after the birth of the child. Most convulsions that occur before or during labor cease when the uterus is emptied and this has been responsible for the former radical method of emptying the uterus, and the relatively high maternal death-rate until more conservative methods were adopted.

During the last year various reports have appeared in the literature concerning the results from treatment of eclampsia (Davis and Harrar, Polak, Lazard, Irwin and Vruwink, Greenhill, Stroganoff and others). It is rather generally agreed that the convulsions may and should be controlled if possible before any effort is made to empty the uterus. In fact, intravenous medication, besides the use of sedatives, controls the situation so completely in most cases that operative interference is unnecessary. One author, however, who resorts to operative interference if the convulsions are not quickly controlled, reports favorable results for both mother and child following emptying of the uterus fairly early.

SUMMARY OF TREATMENT

The present treatment of eclamptic convulsions may be outlined as follows:

1. Sedatives
2. Elimination
    a. Lavage of stomach
    b. Lavage of colon
    c. Laxatives
3. Venesection
    a. To reduce hypertension
    b. To eliminate toxins
4. Subcutaneous or intramuscular medication
    a. Sedative
    b. Diuretic
    c. To reduce hypertension
5. Intravenous medication
    a. To dilute toxins
    b. To neutralize toxic substances by chemical action
    c. To produce sedative action.
    d. Diuretic
6. Termination of pregnancy
    a. To hasten labor already in progress
    b. To induce labor following cessation of convulsions
    c. Cesarean section

If possible a patient with eclampsia should be sent to a hospital so that the necessary treatment can be carried out more easily and effectively. If convulsions impend or have begun, she should be given morphine ½ grain. This may be repeated in doses of ¼ grain at intervals of two hours, depending on her condition, until 2 or 3 grains have been given. Chloral or other sedatives may also be given. Convulsions frequently cease following this treatment. After sedatives the treatment depends largely on the success of the individual physician with further procedures.

Elimination is of value and certain physicians advise gastric lavage, followed by the ingestion of large doses of castor oil or epsom salts. Others advise flushing the colon freely with hot water and still others advise immediate venesection, especially if the hypertension is accompanied by high diastolic pressure. This may be followed by intravenous infusion of from 500 to 1000 c.c. of 10 per cent glucose solution, or glucose may be given without preliminary bleeding. Usually the patient improves immediately, which may be attributed to the sparing effect of the glucose on the liver and on its diuretic action. Following the procedure that Thalhimer used in the treatment of hyperemesis, Miller advocated the hypodermic injection of one unit of insulin to each 3 gm. of glucose on the theory that insulin renders the glucose more effective. The use of magnesium sulphate solution has been found valuable, chiefly because of its sedative action, although it also has a diuretic effect which is useful in relieving preeclamptic edema. Twenty cubic centimeters of a 10 per cent solution of the drug may be given intravenously; McNeile and Vruwink report having given as many as eight of these injections in twenty-four hours. Dorsett reports good results following the use of magnesium sulphate solution in 15 c.c. doses of a 25 per cent solution injected into the buttocks.

If the patient cannot be placed in a hospital, sedatives should be used and elimination obtained by the best method available in the home. Hot packs, which were formerly used extensively, have been found to be exhausting and should be applied with great care if at all. The blood pressure may be lowered by venesection or by the judicious use of veratrum viride,[17] although this is not used extensively in hospital practice.

The point at which measures should be taken to hasten labor or terminate pregnancy is somewhat disputed, but the pendulum of opinion is still swinging toward conservatism, chiefly because the resistance of the patient in eclamptic convulsions is at a low ebb and she will be much better able to withstand shock or trauma, if convulsions can be controlled and elimination established. It is rather generally accepted that medical measures should be used to control the convulsions before the initiation of operative interference. If the patient is in labor and the cervix is completely dilated, labor may be hastened by forceps or version. If convulsions can be controlled and if elimination can be established, the patient may be carried to term or to a time when the fetus is viable in case it has survived the convulsions.

If indicated, pregnancy may be interrupted at this time. Labor may be induced by the Vorhees' bag or other form of induction, or the uterus may be emptied by cesarean section. In most instances, however, it is felt that the condition of the patient with hypertension, edema and lowered hepatic and renal functions increases the risk of cesarean section over less heroic measures. The majority of obstetricians are not advising cesarean section as a method of rapid delivery in cases of eclampsia in the absence of dystocia or other obstetric indications. In 25 per cent of 100 fatal cases, following cesarean section in Massachusetts in 1922, the operation was resorted to because of toxemia. Experience has shown that, when cesarean section is indicated in eclampsia, it is most safely done under local anesthesia.

The treatment of eclampsia does not end with delivery. About one-fourth of eclamptic convulsions occur postpartum, and many patients with marked hypertension and edema must be watched carefully after delivery. Sedatives are used, although they do not prevent postpartum convulsions as effectively as antepartum. Here, again, especially in the presence of edema, elimination is of value and may be secured by magnesium sulphate, ammonium chloride or other diuretics. Retention of nonprotein nitrogen, which is rarely noted in cases of prepartum toxemia, may be found after the cessation of convulsions. If this is associated with oliguria without edema, fluids should be forced in order to increase the output of urine. Most patients who have survived the convulsions will recover rapidly following confinement and will apparently return to normal health. It is important, however, to keep these patients on a nephritic regimen for weeks afterward and to observe them at intervals for the next year. Observations in the Mayo Clinc of nephritis following pregnancy have convinced us that more women than is generally known develop chronic nephritis, following toxemia of the later months of pregnancy.

BIBLIOGRAPHY

1. Davis, A. B., and Harrar, J. A.: Toxemia of Pregnancy. Eight Hundred and Seventy-nine Cases with Convulsions at the New York Lying-in Hospital. Jour. Am. Med. Assn., 1926, lxxxvii, 233-236.

2. Dorsett, Lee: The Intramuscular Injection of Magnesium Sulphate for the Control of Convulsions in Eclampsia. Am. Jour. Obst. and Gynec., 1926, xi, 227-231.

3. Greenhill, J. P.: Eclampsia at the Chicago Lying-in Hospital. Immediate and Late Results. Jour. Am. Med. Assn., 1926, lxxxvii, 228-232.

4. Lazard, E. M., Irwin, J. C., and Vruwink, J.: Intravenous Magnesium Sulphate Treatment of Eclampsia; Collective Report of 142 Cases. Am. Jour. Obst. and Gynec., 1926, xii, 104-112.

5. McNeile, L. G., and Vruwink, John: Magnesium Sulphate Intravenously in the Care and Treatment of Preeclampsia and Eclampsia. Jour. Am. Med. Assn., 1926, lxxxvii, 236-239.

6. Miller, C. J.: Glucose and Insulin in the Toxemias of Pregnancy. Am. Jour. Obst. and Gynec., 1926, xi, 763-766.

7. Mussey, R. D.: Observations on the Treatment of the Edema of the Toxemia of Pregnancy with Ammonium Chlorid. Am. Jour. Obst. and Gynec., 1926, xi, 222-227.

8. Polak, J. O.: Present Status of the Toxemias of Pregnancy. Jour. Am. Med. Assn., 1926, lxxxvii, 226-228.

9. Randall, L. M.: The Weight Factor in Pregnancy. Am. Jour. Obst. and Gynec., 1925, ix, 529-535.

10. Rockwood, Reed, Mussey, R. D., and Keith, N. M.: A Clinical Study of Nephritis in Cases of Pregnancy. Surg., Gynec. and Obst., 1926, xlii, 342-350.

11. Stroganoff, B.: The Improved Prophylactic Method of Treating Eclampsia, with Comments on the Variations Suggested by Williams, Stander, Speidel, and King. Am. Jour. Obst. and Gynec., 1926, xi, 756-763.

12. Talbot, J. E.: Toxemias of Pregnancy. At. Med. Jour., 1926, xxix, 671-677.

13. Thalhimer, William: Insulin Treatment of the Toxemic Vomiting of Pregnancy. Jour. Am. Med. Assn., 1924, lxxxii, 696-699.

14. Tweedy, Hastings: The Cause and Cure of Eclampsia. Brit. Med. Jour., 1911, ii, 990-993.

15. Wieloch, J.: Therapeutische Versuche beim Hydrops gravidarum. Zentralbl. f. Gynaek., 1924, xlviii, 898-902.

16. Woodbury, R. M.: Maternal Mortality: The Risk of Death in Childbirth. U. S. Children's Bur. Pub. No. 158. Washington, Government Printing Office, 1926, 168 pp.

17. Zinke, E. G.: A Critical Review of the Medical and Surgical Treatment of Puerperal Eclampsia. Am. Jour. Obst., 1913, lxvii, 1065-1088.

STRICTURE OF THE FEMALE URETHRA*

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It is my wish to bring to your attention an important phase of female urology, one which has been largely overlooked both by specialists and the medical profession at large. In the literature we find stricture of the female urethra first described by Lisfranc over a hundred years ago. With the exception, however, of the work of Van der Warker in 1890 and that of Vilfoy in 1911 there has been little else of importance until the last few years. Recently Stevens of San Francisco has done almost pioneer work and Hunner, Wynne, Pugh and others have contributed articles of interest on this important topic. So that now we are beginning to realize that, instead of being so rare as to merit little consideration, this condition is one which should be always carefully looked for. Formerly thought uncommon, statistics of recent series show that ten to twenty per cent of all women complaining of urologic symptoms show definite evidence of varying degrees of urethral stricture.

For the type of stricture under consideration many causes have been assigned. Perhaps the easiest way to discuss the etiology of this condition is to follow the classification of Wynne, according to whom these strictures may be listed as traumatic, inflammatory, neoplastic, congenital and unknown. Traumatic stricture is most frequently the result of childbirth, the injury being either from the child's head or from obstetric instruments. Accident may play a definite part in a given case. I have personally seen several cases where a cicatrix following operation has caused a definite stricturing of the urethra. Excessive cauterization during treatment for disease has been mentioned. Inflammation, however, accounts for the big majority of urethral strictures, and of the various types of inflammation, gonorrhea is by far the most important. Occasionally healed ulcerations of tuberculosis or syphilis are causative. Periurethral abscess is mentioned, as are abscess and tumor in the urethra. Urethral tumors, however, benign or malignant, are rare and are to be considered under their own headings rather than under that of stricture. Congenital stricture is rare. Senile stricture, a thickening and induration of the lining of the whole lumen of the canal, finds only a few cases recorded in literature. Hunner speaks feelingly of focal infection as a cause, though Stevens is not in accord with his findings. Other cases, moderate in number must be placed in the "unknown" column, where no definite causative factor can be assigned.

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The female urethra in its histology corresponds to the membraneous portion of the male urethra and is lined with squamous epithelium with here and there a few ducts and glands containing columnar epithelium. The resistance of this squamous lining to infection is the reason for the relatively smaller number of strictures in the female and possibly for the infrequency with which search is directed to this organ. According to Osgood the stricture is an acute narrowing of the lumen of the canal through the formation and contraction of the cicatrix which results from the healing of a laceration, a rupture, or destructive ulcerative process, extending through the mucous membrane of the urethra into its submucosa.

It is usually found on the floor of the urethra and, as in the male, may be of the soft or dense variety. It may be at one point, in segments, annular or longitudinal. It is usually single but may be multiple and it is usually in the anterior third, particularly at the meatus. Stricture of an inflammatory origin (and this means almost always gonorrhea) usually occurs at or just within the meatus. Strictures caused by trauma may be in the meatus or in the lumen and are usually caused by childbirth or contraction following operation. A luetic ulceration is most likely to be found as a generalized induration and contraction of the canal as a whole. Congenital strictures have been reported both at the meatus and in the posterior part of the urethra in the region of the vesical neck.

Subjective symptoms are, as a rule, slow of development and it may be that the pathologic condition has been gradually growing for some time before the patient presents herself for examination. The classical symptoms, including diminution in size of stream, a longer time for evacuation of the bladder, dribbling, etc., are rarely seen except in long-standing cases. Beyond doubt frequency of urination is the most prominent symptom, occurring in at least eighty per cent of all cases. Of slightly lesser frequency is pain in varying types. This may be referred to the bladder, to the urethra, or even to the sacral, lumbar, inguinal and other regions. Burning on urination is present in a number of cases and in a few we get urgency, marked dysuria, dribbling, partial or complete incontinence. The symptoms, on the whole, as usually encountered do not vary greatly from those of the urethritis and trigonitis associated with most of these cases, but in any event symptoms of this type call for urologic examination and in such calibration of the urethra must not be ignored.

A diagnosis includes a most careful inquiry into the history of the case, with particular attention to some of the more important causative factors mentioned above. Venereal disease may be difficult to determine but careful questioning can often elicit definite signs. The use of caustics for treatments, type and kind of medication employed in the douches must all be asked for. History of difficult childbirth, of accident, etc. is pertinent, following which a story of any or all of the symptoms usually associated with this lesion may justify a tentative diagnosis but in any event calls for a complete examination of the urethra.

On the objective side examination of the urine may show nothing, but usually there are at least a few pus cells, owing to the associated urethritis and trigonitis. In some cases there may be a severe urinary infection. To make the diagnosis of urethral stricture one will employ bougies, sounds and the urethroscope. There is nothing much more characteristic than the tug of a stricture on a bulbous bougie. Sounds are frequently tightly grasped. Sounds, however, are not used routinely as one passes from the bougie to the urethroscope. This instrument will often show a pale cicatricial area in the canal which does not readily collapse and which gives a definite tug on the instrument. There is sometimes a dilation to be noticed posterior to the strictured area. A urethritis is usually brought to the eye of the observer and as one looks further up on the trigone he will see signs of a definite irritation.

The point of just what constitutes a stricture of the female urethra ~~will be~~ was brought up and, striking an average from the writings of the most recent authors, ~~one will~~ he concludes that a 26 French is a probable normal caliber of the female urethra, that a 22 French constitutes at least a narrowing, and that a urethra which gives a definite hang to an 18 French is definitely strictured.

There is secondary pathology to be considered. Attention has been called to the dilatation and congestion behind the stricture in the urethra and it is rare that cystoscopy fails to give evidence of some inflammation, not only of the posterior urethra but often extending upward in the region of the anterior vesical neck onto the trigone, or even spreading further along onto the bladder mucosa. Trabeculations were noticed in one or two cases of long standing and while examination of the kidneys and ureters in any of my cases has not given a great amount of dilatation, nevertheless there have been three cases in which a pyelitis, two with moderate dilatations of the ureters and pelvis, have cleared up following treatment of the urethral condition.

Treatment is in the first place to be directed to the causative factor. Local inflammatory processes in adjacent structures as well as systemic infections must be eradicated. With due attention to such factors, treatment of the urethral condition resolves itself into some form of dilatation. This may be of the rapid or slow method. There can be no question but that the gradual dilatation with gentleness and the use of a local anesthetic, combined sometimes with a hypodermic, is the preferable method. Dilatation should be carried out with graduated sounds or bulbs about two points a week and should not be carried to the extent of bleeding. These dilatations are carried to the point of a 26 to 28 F. graduate, beginning with biweekly intervals, then weekly, then monthly, and then checking at longer intervals. If the stricture be a soft one, as the majority are, usually a half dozen treatments will suffice to rid the patient of symptoms. Rapid dilatation, even under gas anesthesia, is sometimes preferable in the intensely neurotic patient or where pathology of the higher urinary tract demands immediate relief.

Operative interference by way of internal or external urethrotomy is occasionally indicated; internal urethrotomy where dilatation is resisted (most of these strictures yield fairly easily) or where the progress of dilatation is slow or the patient refuses repeated dilatations. This or rapid dilatation may also be required for immediate relief, where there is a partial incontinence or a severe cystitis or pyelitis, etc. This may be done with the ordinary urethrotome, cutting first through the floor and then the roof up to a 28 or 30 F., which caliber must be maintained by frequent postoperative dilatation. The use of the cautery knife as advocated by some will eliminate a certain amount of the bleeding. External urethrotomy is rarely indicated but when done consists of a complete exposure through the vaginal wall, the excision of scar tissue with an end-to-end anastomosis or sometimes a longitudinal incision with a lateral closure. The bladder should be drained through the anterior wall of the vagina for a period of at least ten days.

In the series of cases which I wish to present of a hundred consecutive cases complaining of urologic symptoms, there were three cases of postoperative stricture, two with childbirth as the important factor, one a combination of these two factors, one accident and one due to the use of caustic antiseptics. There were six cases with an undoubted gonorrheal origin and two in which the etiologic factor was impossible to determine—a total of sixteen cases. Only one case was regarded as a stricture which did not give a definite hang to an 18 French bulb. Two cases were found posterior, two both anterior and posterior. The others were either at the meatus or in the anterior third. A kidney investigation was done on six of these cases and a pyelitis found in three. The comparatively smaller percentage of cases due to Neisser, as compared with other series, is probably due to the fact that practically all of these were taken from private practice.

Four cases of diversified etiology are presented:

Case 1. Mrs. E. R., age 32, widowed two years. Has two children eight and ten years of age. No previous trouble but in the last two months complained of pain in the lower right back, frequency and some burning before and after urination. She denies Neisser infection, although admitting to a moderate leucorrhea for the past two years. No previous symptoms referable to the bladder.

Both kidneys were palpable and slightly tender. There was an enlargement of the right Bartholin gland, a moderate endocervicitis with a mixed infection in the discharge and a stricture of the meatus with a definite hang to a 14 French bulb. Catheterized specimen of urine showed a fair number of w.b.c. and a few staphylococci. After dilatation in two sittings cystoscopy was performed. This showed a urethritis and trigonitis but the kidney investigation was negative. One more dilatation was performed. The patient refused to follow up dilatation saying that she was cured.

In view of suddenness of onset of the leucorrhea with history of exposure there can be no doubt but that this stricture had its origin in a gonorrheal infection.

Case 2. Mrs. W. R., age 37, married. Has had spells of frequency and dysuria since the birth of her second child ten years previously. Lately, however, is getting up five or six times at night, with hourly frequency by day, and with considerable dysuria. No history of venereal or other trouble which would bear upon the present situation.

Examination showed a stricture at the meatus which would admit only an 8 F. bulb. At biweekly intervals this was brought up two points at a sitting to 32 F., the bladder being irrigated each time and instillations of either argyrol or weak silver solution following. At this time she had nycturia two times, two to three hour intervals by day and a complete disappearance of all irritation on voiding.

This patient's trouble dated from the time of childbirth. Treatment at the recurrent intervals had been by internal medication and two years previously by bladder irrigations which gave some relief, probably due to partial dilatation of a then existing stricture.

Case 3. Mrs. S. M., age 58. Several years previously had an operation on her uterus and in the latter part of 1925 had a two stage Coffey operation for rectal carcinoma. The history otherwise was negative. When seen about a year later complained of frequency and dysuria with dribbling at times.

The cystoscope entered the urethra easily but was stopped by a marked stricture of the posterior urethra. Rapid dilatation from 12 to 24 F. was done, after which the cystoscopic view showed a marked urethritis, a definite pale strictured area in the posterior urethra and a moderate cystitis. Symptoms were completely relieved at the end of eight biweekly dilatations with bladder irrigations and instillations.

This case was apparently a result of postoperative scar tissue contraction.

It is evident that this percentage of cases would not be seen in the ordinary routine, unless there had been special search for this type of pathology. Not a few would have been relieved by the dilatation incident to a cystoscopic examination. I wish to draw your attention to the fact that the simple use of the bulbous bougie will often bring to light a condition which is more common than ordinarily believed and often overlooked, the classical symptoms of which are diagnostic but usually not present. The diagnosis is easy and should be a routine part of a urologic examination. The results of treatment are usually quite gratifying.

404 Medical Arts Building.

VALUE OF THE ROENTGENOGRAM IN PELVIMETRY*

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For a number of years we have felt that the technic employed in pelvimetry has been crude and inaccurate, with deductions often very misleading.

DeLee states: "Of late years there has been a tendency to neglect pelvic measurements. Most physicians are not skilled in taking the internal dimensions, and the external ones are unreliable indices of the size of the pelvic cavity. Further, practitioners have to rely on a test of labor, letting the patient have pains a certain length of time, and if the head fails to descend, they perform cesarean section. This is a blundering method of procedure, and is both unscientific and costly in human life. We should always strive to acquire as exact a knowledge as possible of the shape and size of the parturient passages."

The external pelvic measurements are most often obtained, but the data may be quite in error. To illustrate, the external anteroposterior measurement of the female pelvis is normally 20½ cm. By deducting 8 cm. from this measurement, Baudelocque believed that the vera could be obtained. This idea was taught for many years. However, it is erroneous, since the bones and their conformations cause a variance as great as 5½ cm. (Goenner, DeLee).

The thickness of the lower vertebral bones, especially the sacrum, is subject to much variation. The normal ratios do not maintain in case of the rachitic, the masculine type, the flat, the osteomyelitis pelves, nor in the pelvis distorted by trauma. DeLee has a specimen with an external conjugate of only 18 cm. and a conjugate vera of 14 cm., while another has a Baudelocque of 21 cm. and a vera of 9½ cm.

Deductions from the internal pelvimeter are more accurate, but difficult to obtain, especially in primiparæ and even with multiparæ it is best to administer a general anesthetic in obtaining the data.

A roentgenogram offers full and exact information, giving us at once a diagnostic procedure, by which both fetal head and maternal pelvis may be accurately measured. However, an x-ray picture is not only an enlargement but also a distortion of the object photographed. That is, the object projected produces an enlarged image, plus some distortion. This is true even with stereoscopic plates.

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* Read before the Boise Physicians Club, Boise, Ida., March 16, 1927.

In order to accurately measure this enlargement, we have devised the following technic. A metal measuring rod, perforated every centimeter, is placed on the patient at the point of level we wish to measure. Thus the distortion of the object measured and the distortion of the measuring rod are the same. For example, we wish to obtain the transverse diameter of the pelvis and the engaging fetal part. The patient lying on her back, the rod is placed across the upper limbs (see fig. 2) as close to the pubes as possible. This position furnishes the best data, both for fetal and maternal measurements.

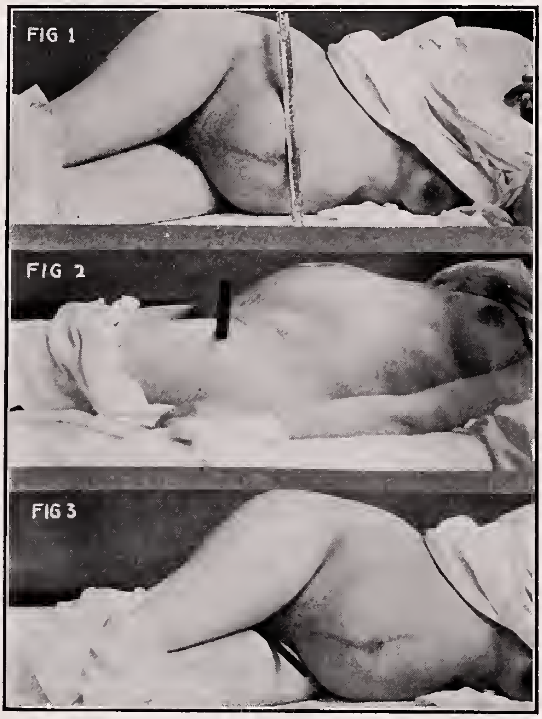

Fig. 1. Shows cm. measuring rod, perforated every cm.
Fig. 2. Shows patient and rod in position for lateral
Fig. 3 Shows patient and rod in position for anteroposterior dimensions.

A lateral position with rod between the limbs, and close to the perineum (patient on her side) gives us the anteroposterior measurements in the midplane of the pelvis and the fetus. Except in thin patients, this position does not offer as much information as does the one taken anteroposteriorly.

CONCLUSIONS

The above described technic affords absolutely accurate data, readily obtained. Abnormalities are observed at once. Borderline cases are differentiated. Multiple pregnancies can be determined. The procedure is harmless.

GRANULOMA INGUINALE

THE BEGINNING LESIONS, CONTRACTED IN THE UNITED STATES

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and
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The beginning lesions of granuloma inguinale which have been contracted within the boundaries of the United States will be the main subject matter of this paper. These lesions are so confusing and erratic in their behavior that we hesitate to attempt such a paper with only thirteen cases to report.

In private practice many patients will not submit to delays and expensive laboratory examinations. If the handling of our patients appears different from the complete reports of outpatient departments or charity clinics, it is because we have to prove our cases clinically with a minimum of time and laboratory work.

We have taken it for granted, regardless of the role played by the Donovan bodies in the causation of granuloma inguinale, that they are a constant finding in the condition. In working out the microscopic picture we found an illustrated article by Gage in the March, 1923, issue of *Archives of Dermatology and Syphilis* to be most valuable, instructive and indispensable.

In our series of thirteen cases of beginning granuloma inguinale we found the Donovan bodies in nine cases. The other four had rapidly growing ulcerations which had been treated by local applications, ranging from lotions, dusting powders, salves and caustics. Some of our cases had received repeated doses of arsphenamine. Tartar emetic was given all our patients by us. None of them had ever had it administered previously.

In all the cases in which we found Donovan bodies we were able to determine approximately the incubation period. Some of the patients were exposed only while in town on definite dates. We found the incubation period in our climate to tally approximately with that of the initial lesion of syphilis in this climate. This period varied from three to five weeks.

Each case, seen by us when the beginning lesions were a few hours to a few days old, presented a difficult problem in differential diagnosis. The lesions had the characteristic look and induration of the hard chancre. However, the inguinal glands were not enlarged. Dark field illumination showed no spirochetes. Local Wassermann tests were negative. The chancroid could be ruled out by many factors. We have seen no cases of chancroid in this community in the past ten years. Where these lesions were folded in apposition to healthy tissue, the sound tissue did not become infected. The inguinal glands were not enlarged to any degree, let alone any painful induration. The Ducrey organisms could not be found. The time element of exposure in many of these cases was known and the incubation period eliminated the consideration of chancroid.

Some of the lesions were painful or quite annoying to the patient. Others were absolutely painless. One case in the series contracted the disease in Oklahoma and suffered intense agony from two lesions, both of which were about the size of a ten cent piece. Two cases complained of intermittent burning and itching sensations.

Most of the beginning cases had used some local application, such as calomel powder, iodine mercurochrome and other agents. Whether these applications hindered us in recovering Donovan bodies we do not know. We do know these agents prevent accuracy in the dark field examination. In only three cases did we find the characteristic bodies before we instituted differential diagnostic treatment.

The painful scratching of the lesions, the saline dressings and the long wait over a period of time until the blood became positive were factors we could not overcome and still retain these private patients. They demanded treatment and not tests.

Whenever we could not clinch the diagnosis by the microscope and prove clinically the lesions were either a beginning chancre or beginning granuloma inguinale, we were forced to rule out the chancre by administering arsphenamine. Granuloma inguinale is absolutely unaffected by arsphenamine, while the chancre is quickly and promptly healed by it. Six days later another arsphenamine was given. If the lesion was healing in the customary way, we knew we were dealing with syphilis and not with granuloma inguinale. If the lesion or lesions showed no improvement during the two weeks after the first arsphenamine, we then knew we had granuloma inguinale to deal with. At this period we commenced the use of tartar emetic. This method may be wide open to criticism but, confronted with the same problems, we believe the practical man will see the light.

A description of a fully developed case of granuloma inguinale is of no avail when confronted with the beginning lesions of this condition. Inspection and palpation reveal them as typical beginning lesions of syphilis. Descriptions of the beginning granuloma inguinale contracted in the tropics or of those originating in the United States are not easily available to the general practitioner. The disease is here in this country. It will spread. If the diagnosis is puzzling to men more familiar with lesions of this type than the general medical man, many cases will progress to mutilating deformities of areas involved.

DESCRIPTION OF THE LESIONS

There is no doubt that the beginning lesion starts as a vesicle. The small blister either ruptures of itself or the top is scratched or rubbed off intentionally or unintentionally. It is immaterial whether the vesicle tips on an already formed but immature papule or the papule arises after the vesicle is formed. The base of the blister is the base of the first ulceration. The ulcer base is a greyish slough and oozes serum. The slough varies in appearance to the degree of ordinary cleanliness of the patient. The edge of the ulcer tends to undermine as time progresses and the sloughy base becomes more and more granular.

A composite picture of the ulcer from after the first week up to approximately the fifth week presents an indurated ulcer surrounded by a raised edge. The base of the ulcer is covered with many finely granular spots with here and there coarser and larger granular areas. The mixture of large and small granular spots, forming tiny hills and depressions of different sizes, gives the base a "moth eaten" appearance.

Again, by indulging in a flight of fancy one could compare the base to a bas-relief map of a mountainous district carved on a cameo. The raised border of the lesion is undermined but not with violent inflammatory loss of tissue. The border seems to fold over in a minute preputial manner. This border soon assumes a bluish-white or violacious color and, as healing commences, it appears slightly constricted and whiter in color. The portion of the ulcer which remains stationary tends to heal spontaneously and in healing assumes this color. This small healing, or healed area, with its bluish coloration and the rest of the lesion showing the undermined borders and irregular granular base, is typical of lesions from two to three weeks old.

CASE HISTORIES

Case 1. Our first case of granuloma inguinale was seen in May, 1925. The patient, aged 28 years, presented himself at our office for examination May 7.

His condition was contracted in Oklahoma and first became apparent about three weeks after exposure. He stated that the sore was first noticed as a reddened, raised "blister" which soon became yellow and ruptured, forming a tiny ulcer. This ulcer was very painful. We saw him about two months after the first appearance of the lesion. During this period he had received six injections of neosalvarsan. Several blood Wassermanns were reported negative.

Examination showed two ulcerated lesions midway on the shaft of the penis. The second had appeared approximately one week after the first and after the neosalvarsan treatment had been instituted. These lesions were both about the size of a dime. The borders were raised and ragged, were undermined and presented an immediate purplish areola, surrounded by a reddened inflammatory area adjacent to the healthy skin. The ulcers were markedly indurated, with a granulomatous tissue formation covered by a greyish exudate. The entire base of the ulcerations had a moth-eaten appearance. Both lesions gave off an abundant seropurulent and offensive discharge. They were exceedingly painful. The inguinal glands were only slightly enlarged and were not painful when palpated.

While the lesions were somewhat similar to those of chancre, and especially those chancres complicated by a superimposed secondary infection, the history and treatment already received ruled out a diagnosis of syphilitic infection. The incubation period, the chronicity and failure to respond to various antiseptic solutions, powders and unguents excluded chancroidal infection. From the clinical appearance and history we considered a diagnosis of granuloma inguinale. A smear obtained by gently scraping the borders of the lesions and staining with Wright's stain showed the presence of typical organisms which have been described as Donovan bodies.

Treatment. We immediately instituted intravenous tartar emetic treatment, giving him daily injections of a 5 c.c. of a 1 per cent solution. Pain was somewhat relieved by application of a novocaine ointment. The tartar emetic was continued for six injections, when he was forced to leave the city on account of his work. He had no reaction from the tartar emetic injections, and his urine was negative for albumin following the six injections. The pain diminished as the injections increased.

As his occupation as advance man for a theatrical organization required that he travel from place to place, with only a stop-over of one or two days, we gave him enough of the drug to last for several weeks, told him the name of it and where he could get more, wrote out the diagnosis for him and impressed him with the fact that he should have treatment every three or four days, unless some contraindication occurred which would be recognized by the physician giving him the injection.

We saw this patient the following May (1926). Both lesions had been healed for a month, but he was given several injections of tartar emetic because of the possibility of a recurrence.

The duration of the disease in this case was approximately one year, owing to the fact that sometimes he had to go as long as ten days between treatments. The diagnosis was proven by the finding of Donovan bodies. The only treatment received consisted of intravenous injections of 5 c.c. of a 1 per cent tartar emetic solution, and a novocaine ointment as a relief for pain.

Case 2. Mr. S. H., aged 26 years, white, railway worker. Came to our office Feb. 15, 1926. He had a sore on his penis which had been present for two months which would not heal, regardless of various antiseptics applied by himself. Inoculation occurred at Portland; incubation period indeterminate.

Examination showed a somewhat typical lesion of granuloma inguinale about 1.5 cm. in diameter, situated on the dorsum of the penis at the junction of the glans and mucosa. When seen the lesion was covered with a firm crust. Removal of the crust resulted in the escape of a small quantity of yellow pus. When cleaned, the lesion was seen as a hard, indurated, cupped-out ulcer, with irregular, slightly undermined borders, and with a base consisting of unhealthy granulation tissue. The lesion was only slightly painful. There was only slight inguinal adenitis.

Clinically the lesion had the aspects of a chancre. However, this man told us he had had syphilis seven years previously and had received one injection of neosalvarsan. A Wassermann test was made at once and was reported by a reliable laboratory as being negative. Smears showed the presence of Donovan bodies. He was immediately placed on intravenous tartar emetic treatment and wet dressings of saturated solution of boric acid.

A peculiar phase of this case was its failure in progressive extension, and in its comparative painlessness. The total duration of the disease was four and a half months, but he was only under treatment two and a half months.

The next case is very important in our series because it was characteristic of those which we were to see later, and brought out more strongly the variations in symptoms which may occur. The lesions in this case were so misleading, that in spite of our previous experiences, we made a diagnosis of chancre and gave him two injections of neosalvarsan. We soon saw our error and set about to rectify it.

Case 3. Mr. J. F., 20 years old, white. Came to our office June 8, 1926. He had one large lesion and three minute lesions in close proximity on the shaft of his penis. The large lesion had been present fourteen days and was clinically typical of a chancre. The incubation period could not be accurately determined. The lesion was only slightly painful. There was only slight inguinal adenitis.

His blood Wassermann was negative. We could not demonstrate Donovan bodies or spirochetes. The lesion seemed to so closely resemble a chancre that we decided to give one or two injections of neosalvarsan as a therapeutic test. This we did, and our results were nil.

By this time, three weeks after the appearance of the lesion, the clinical appearance and symptoms assumed those of a granuloma inguinale. The three small lesions had coalesced to form one large lesion, and the two large lesions took on the characteristic ulceration of granuloma inguinale. Both lesions now became very painful and there was a marked seropurulent discharge from them. *There was practically no inguinal adenitis.*

Appropriate treatment was started at once, June 20. In all, this patient was given two series of twelve injections of intravenous tartar emetic at intervals of from one to three days. The lesions became less painful, and definite healing was evident after the fifth injection.

This case responded nearly immediately to the tartar emetic therapy, the lesion healing with the characteristic bluish-white border and was well August 22.

We were particularly fortunate in having a case of advanced granuloma inguinale contracted in the Orient under treatment during the early part of the time we were collecting these cases. As a digression a brief case history and illustration will serve to show the value of this case as a check and balance.

Case 4. *Case history of fully developed Oriental granuloma inguinale.* Captain J. M., white, age 42, ship master, presented himself Aug. 11, 1926, with lesions which were of eighteen months duration. Disease contracted in Shanghai, China. He had received thirty-five intravenous arsphenamines, numerous intramuscular injections of mercury. Also he had mercurochrome administered intravenously twenty-five times. Salves, powders, lotions, caustics and actual cauterization were used locally while undergoing the above measures. He had lost forty-five pounds in weight since his infection, and presented a cachectic pallor.

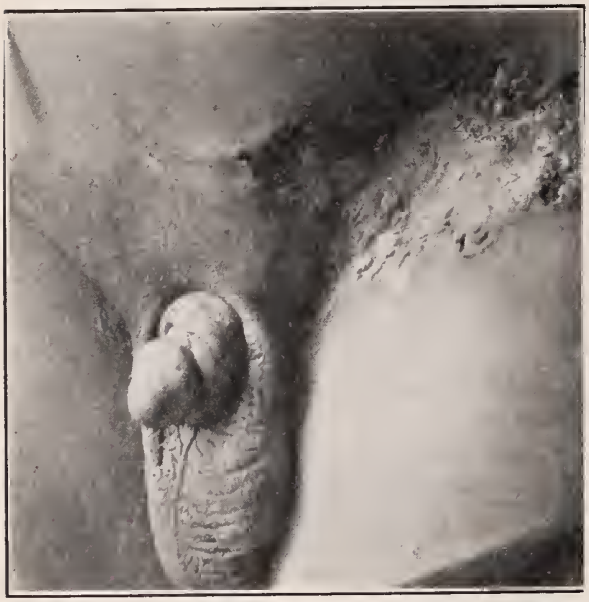

Fig. 1 (Case 4). Fully developed Oriental granuloma inguinale.

He had consulted over fifteen physicians in the Orient and had been treated for syphilis by each and every one. Had the disease been syphilis, one intravenous arsphenamine would have healed the lesion even after its enormous spread. His treatment made the diagnosis instantly.

However, Donovan bodies were easily found and for the first time he received tartar emetic intravenously. The dosage could not be advanced in his case. He was given 5 c.c. of a 1 per cent solution averaging every other day, with periods of remissions due to the development of an albuminuria after variable series of these treatments.

His ulcerations were excruciatingly painful. Local applications which would soothe burned areas would cause him terrific pain. This pain became less and less after the first five treatments with tartar emetic. But the lesions did not show any improvement until after the twenty-third, when marked improvement commenced. After thirty-eight treatments of tartar emetic over a period of little more than three months, the lesions showed fifty per cent healing and he had gained twenty pounds in weight. At this time circumstances necessitated his removal to another city, thus preventing a report as to his present condition.

The next case is rather unique, in that it was the first one of four seen during the month of November, 1926, and insofar as all four cases were traced to the same source Three of the men worked at the same place and occupation, while the fourth man was a janitor in the house where the disease was contracted.

Case 5. Mr. L. B., white, aged 35 years, a janitor, presented himself for examination on Nov. 2, 1926. He had two moderately painful, markedly indurated ulcers on the corona. These lesions were both covered with a greyish exudate. There was slight inguinal adenitis. The duration of the lesions was two weeks. The incubation period was about twenty-four days, as near as could be learned. These lesions were clinically chancres with a superimposed secondary infection.

We knew that this man had had a positive Wassermann two years previously and had not received any treatment. We were not able to demonstrate Donovan bodies in this case. However, the clinical evidence was so strong that we decided to institute antiluetic treatment. He received three injections of neosalvarsan 0.6 and three injections of bichoridol gr. 1.

During this time, three weeks, no improvement was noted in the lesions. We were then rather unpleasantly made aware of the fact that we had made a mistake in diagnosis. In the five weeks since the first appearance of the lesions, they had become progressively enlarged and assumed the characteristics of granuloma inguinale, *although they were relatively painless.*

Treatment consisting of intravenous injections of tartar emetic were instituted for one month. During this time the patient received fifteen injections. Marked improvement was noted, but he became dissatisfied and discontinued the treatment. We saw him two months later and complete healing had taken place by merely continuing with a dusting powder of bismuth formic iodide which he had been using during our treatment.

Case 6. Mr. R. T., aged 27, a dredge-worker. Came to our office Nov. 4, 1926, complaining of a very painful sore on his penis. It had been present for fifteen days. He had been exposed at the same source as Case 5, but the incubation was somewhat indefinite.

Examination showed a typical lesion of granuloma inguinale, situated on the mucosa near the frenum. The lesion was very painful, with moderate offensive suppuration. The blood Wassermann was negative. Donovan bodies were demonstrable.

Tartar emetic treatment was immediately instituted and given every second or third day for the following three months. The lesion was completely healed by Feb. 5, 1927.

Case 7. This man was exposed in the same house as cases 5 and 6. He was first seen on Nov. 23, 1926. He had a painful lesion of about 1 cm. in diameter, involving the corona which had been present for two weeks. Incubation period was approximately twenty-four days. Blood Wasserman was negative. Donovan bodies were found.

Intravenous tartar emetic therapy was instituted at once. The week after treatment was started he developed a painful vesicle near the initial lesion. This vesicular area became swollen, formed a pustule and ruptured, leaving a typical painful ulceration similar to those previously described.

Treatment was started Nov. 25. Improvement was noted after five injections had been given. However, the patient became dissatisfied and voluntarily discontinued treatment.

Case 8. This case was exposed at the same source as cases 5, 6 and 7. The duration of the sore on the shaft of his penis was two months.

He was seen Dec. 1, 1926. He had a very painful granulomatous ulceration about 1.5 cm. in diameter on the shaft of his penis. It presented a typical clinical picture of granuloma inguinale. The blood Wassermann was negative. There was no adenitis. Donovan bodies were not demonstrated.

However, the clinical evidence indicated tartar emetic treatment. This was instituted at once and marked improvement was evident after seven injections had been administered. We also tried a local application of 2 per cent tartar emetic ointment, but with negative results. A total of twenty-one injections were given and the lesion was healed in two months after treatment was first started.

The following four cases are all typical cases of granuloma inguinale as seen in this locality, and are all under treatment at the present time. They are interesting both from a clinical and therapeutic standpoint; therapeutically because of the fact we have been using intravenous injections of antimony sodium thioglycollate (Hynson, Westcott and Dunning) which has been reported as having a favorable effect in this condition.

Case 9. A very interesting case as it developed that this one was one of a double infection, i.e., chancre, plus granuloma inguinale. The patient, aged 23 years, white, no occupation, presented himself July 9, 1927. He had five slightly painful, indurated ulcerations on his penis. There was marked *painless* inguinal adenitis. He was persuaded to bring his consort in for examination. She presented typical secondary lesions of syphilis. Her initial (?) lesion had evidently been on the cervix.

In view of the above findings a Wassermann was not taken, but active antiluetic treatment started at once. He experienced a typical neosalvarsan reaction—chills, fever, generalized aching and lassitude about four and a half hours after administration. Within one week one of the lesions in the region of the frenum had completely healed, but the remaining four had become progressively worse, were quite painful and were clinically the lesions of granuloma inguinale.

We were now confronted with a somewhat difficult problem in therapy. His physical resistance was below that of normal and his treatment had to be given with caution. A conservative regime of the continuous technic of antisyphilitic therapy was instituted and whenever it was considered safe he was given intravenous tartar emetic. He received some eighteen injections of tartar emetic and three of antimony sodium thioglycollate which rapidly finished the almost healed areas.

Case 10. A young man, white, aged 28 years, and a logger. He was seen July 19, 1927. At this time he had two slightly painful lesions on each side of the frenum. Only slight inguinal adenities. Borders undermined and induration not extensive enough for chancre. Duration of sore about six days. Incubation between three and four weeks. Both blood and local Wassermann were negative. Donovan bodies demonstrated with Wright's stain.

Tartar emetic therapy was instituted at once. At first it was thought the lesions were responding favorably to treatment, but after five injections, given over a period of ten days, the lesions were extending and growing rapidly worse. The frenum became undermined and totally destroyed. Then the glans became involved and at the same time the initial sites of the lesion showed evidences of healing. The lesion had reached the proportions as seen in the illustration (fig. 2), even after twenty-one injections of tartar emetic, the treatment received up to Sept. 26.

On Sept. 28, he was given 20 c.c. of .5 per cent antimony sodium thioglycollate (H, W & D) and the lesion exposed for four and a half minutes to a suberythmatous dose of x-ray.

He has now had five injections of the antimony sodium thioglycollate. Healing noted following the third injection. There was also a marked decrease

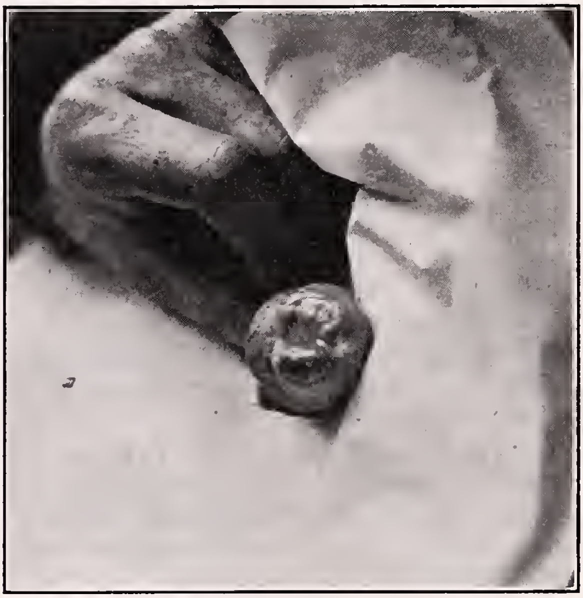

Fig. 2 (Case 10). Destruction of frenum and nearly one-third of glans.

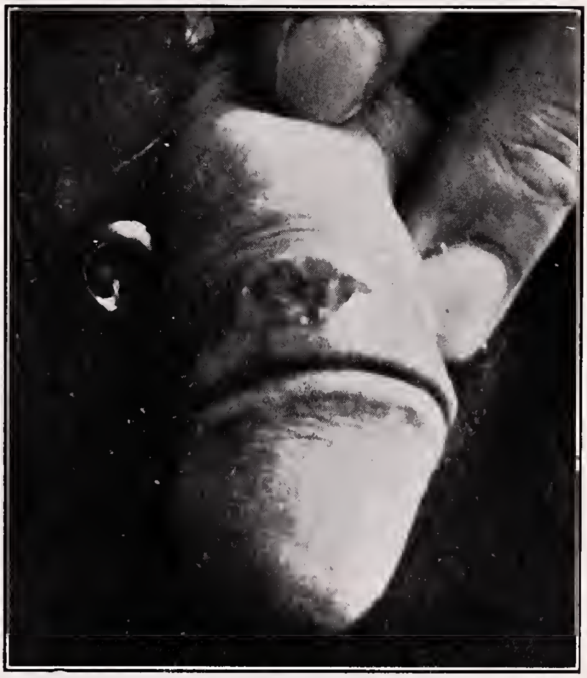

Fig. 3 (Case 11). Shows large and coarse granular base.

in the seropurulent discharge from the lesion. The loss of tissue in this case, representing practically one-third of the glans, is an index of the gravity of the disease.

Case 11. This man, white, aged 36 years, a hotel keeper, came to us Sept. 9, 1926, complaining of a painful sore on his penis. Duration of sore fifteen days. Incubation could not be determined. Innoculation at Portland.

The lesion presented a typical picture of granuloma inguinale. No inguinal adenitis. Lesion about the size of a twenty-five cent piece and very painful. Blood Wassermann negative. Donovan bodies were demonstrated.

He was given ten injections of tartar emetic with very little results except that there was no further extension of the lesion. Sept. 28, a suberythematous dose of x-ray was given.

Sept. 30 injections of antimony sodium thioglycollate were started. These have been given every three days. He has now had five injections of this drug and the lesion is healing very rapidly.

Case 12. A man, white, 32 years, and a clerk, came to us Oct. 11, 1927, with a painful sore on his penis. Duration *two months*. Incubation could not be determined as he was exposed at the same place every week. The sore started as a "blister," was very painful, rapidly formed a pustule and ruptured in two days leaving an ulcer.

When seen the lesion was very painful and presented all the signs of a granuloma inguinale. The lesion was of a linear type, involving the mucosa and encircled about half the circumference of the penis near the corona. His blood Wassermann was negative.

Treatment with intravenous antimony sodium thioglycollate, 20 c.c. of .5 per cent was instituted Oct. 12. Two days later the pain had practically disappeared, secretions were diminished, the borders were assuming a slightly purplish tinge and healing was apparent.

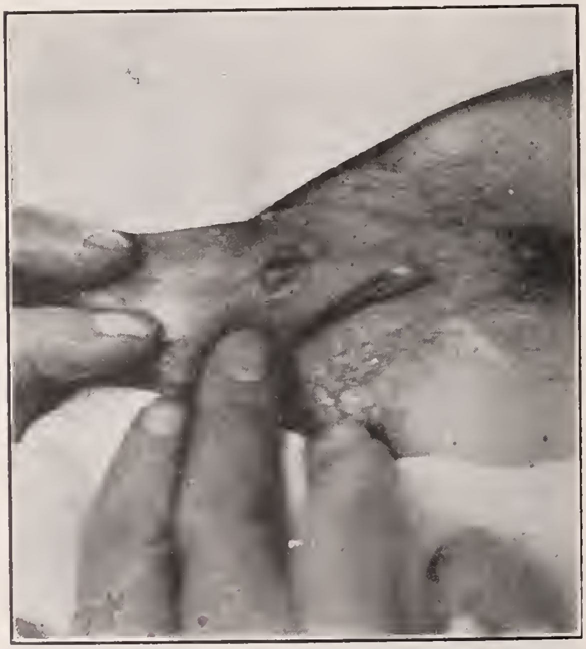

Fig. 4 (Case 13). Lesion in female.

Case 13. Olga H., age 22, referred. Had been under treatment for syphilis for over one year. On September 15, 1927, she received a routine intravenous arsphenamine from her physician. Two days later she was inconvenienced by a sore on the outer side of the left labium major.

She was referred to us Oct. 18 after her physician had given her three intravenous treatments of tartar emetic (5 c.c. of a 1 per cent solution on alternate days). Despite this she developed a tiny blister above the original ulcer which undoubtedly is a new lesion. She had a violent reaction to antimony sodium thioglycollamide Oct. 18, coughing for one hour and ten minutes in a most distressing manner. In this case Donovan bodies were recovered.

DISCUSSION

If the true Oriental type of granuloma inguinale in its most typical and fully developed manifestation is occasionally overlooked by physicians in countries where it is not uncommon (case 4), surely the beginning lesions of the condition contracted in this country will be somewhat puzzling.

The differential diagnosis by means of arsphenamine without local treatment is urged in cases where the Donovan bodies or spirochetes cannot be found. For physicians remote from laboratories this method is recommended as routine.

Healing of the lesions occurs very slowly when they are under the prepuce. No approximate time for their healing can be prognosticated. Each lesion is a law unto itself.

Whether these initial ulcers would spread and become as destructive as those contracted in the Orient we do not know.

While not having treated any individuals of this race, we are of the opinion that the Filipino has introduced granuloma inguinale into this portion of our country.

TREATMENT

Tartar emetic is a specific for granuloma inguinale. Antimony sodium thioglycollamide and antimony sodium thioglycollate (Hynson, Westcott and Dunning) are newer preparations and we believe them to be superior to tartar emetic. Intravenous administrations of any of these three remedies are not without some alarming symptoms. Prolonged violent coughing, with a fearful sense of suffocation and dizziness, are the prominent symptoms. These may appear immediately after each and every intravenous injection or only appear the first time. We were unable to step the dosage up to the amounts recorded by some authors.

All local treatment seems to be useless except for purposes of cleanliness. X-ray exposure for two-thirds of an erythema dose tends to dry the lesions and, although our experience with it has only been with three recent cases, we believe it beneficial.

SUMMARY

All of the cases showing beginning lesions of granuloma inguinale contracted the disease in the United States.

Granuloma inguinale will soon have to be considered in all ulcerative lesions of the genitals.

In many doubtful early lesions arsphenamine intravenously as differential diagnostic therapy is indicated. Early diagnosis may prevent large scars and deformities.

Selling Bldg.

ENURESIS IN THE MALE *

A CONSIDERATION OF THIS SUBJECT AND REPORT OF CASES

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Enuresis, especially in childhood, receives far less attention from the general practitioner than it deserves, undoubtedly for the following reasons. Bedwetting is a disorder common to many children who finally outgrow it; its objective findings are very obscure, and the patients do not respond favorably to medication. While it is essentially a disease of childhood, and one directs his efforts to its consideration in the life of the child, he at once finds the age limit extending upward. In this report the age limits are bridged by a span of thirty years.

Enuresis here wil be considered as the involuntary discharge of urine in a patient above the age of five years. At this age the child should have gained the faculties necessary in retaining and discharging the bladder content at his own will. No mention is made here of the aged sufferer from acute or chronic prostatitis. Phillport states that "boys who are subject to enuresis are ordinarily affected later by seminal losses and may become genital or urinary psychopathics, not in consequence of the incontinence itself but of the original defect which during their early years was the determining cause of their infirmity and which continues its influence." Granting this to be true, then any defect of the urinary tract which exists in the child or youth should be corrected, if possible, for fear of its continuing to a more serious end.

The following classification of causes is quite satisfactory and will more than cover the ideas to be considered.

1. Functional neurosis commonly spoken of as "weakness of the whole nervous system." This we might say is the part of the classification that covers cases in which no exact diagnosis can be made.
2. Degenerative diseases: (a) Tabes dorsalis. (b) Manifestations of abortive attacks of epilepsy.
3. Local irritation.
4. Results of injuries or operative procedures.

Anatomically the bladder is a hollow muscular organ with a normal capacity of 500 c.c., but usually empties when the contents reach 240 or 300 c.c. The muscle fibers are of the striated variety and the bundles which they form are arranged in three imperfectly separated strata. The nerve supply is derived on each side through the vesical plexus. The fibers of this plexus come from two sources. One set comes from the lumbar nerves through the hypogastric plexus, the other from the third and fourth lumbar plexus. In short, this organ is controlled both voluntarily and involuntarily. The sphincter of the membranous urethra which lies in the urogenital diaphragm is controlled by the muscle bulbocavernosus and is supplied by the deep branch of the perineal nerve or by the pudendal, arising from the third and fourth sacral. Interlaced with these fibers, those from the hypogastric plexus govern the ejaculatory ducts. Here, also, we must consider the outlet of the bladder as voluntary and involuntary. The phylogenetic relation of the sympathetic and the cerebrospinal systems is impossible to determine. We know that they are intricately related and that one is subservient to the other.

Young gives a clear and concise description of the mechanics of micturition. He bases his theory on his observations of the trigone during cystoscopy. The trigonal muscle, with base attached to the intraureteral line, tapers down and passes through the internal sphincter in the shape of an arc and is attached near the base of the veru. A violent desire to urinate is accompanied by contraction of the trigone which pulls the sphincter open, the sphincter at the same time being relaxed.

The veru montanum in the floor of the prostatic portion of the urethra is quite worthy of mention here. Normally it presents itself as a crest, with the ejaculatory ducts emerging at each side laterally and slightly anteriorly. Inflamed, the veru assumes varied shapes and may increase noticeably in size. The urethral canal here when collapsed is found to assume a lateral slit-like appearance. This will give slight pressure on the veru which normally would give no reaction. If inflamed, pressure here will give discomfort often interpreted as a desire to urinate. Likewise, the presence of a foreign body anywhere from the vesicle neck out will stimulate the bladder to contract and the sphincters to relax.

Prior to the advent of the cystoscope and posterior urethroscope these conditions were considered as those coming under the head of functional neurosis. In the past there has been a tendency with

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the authorities to attribute enuresis to a "looseness" of the nervous system. Tehsche states that, "in spite of many theories, enuresis nocturia is at present regarded as a functional neurosis which is a manifestation of a weakness of the whole nervous system or of a part which regulates the function of the bladder." Potozky states that enuresis is practically always a nervous symptom and is due in general either to nervous hyperexcitability, psychopathy or defects of intelligence. He does not mention local irritation and merely states that treatment should be casual.

It is my opinion that many times the "functional neurosis" is secondary to the local irritation. Certainly in some cases wet clothing and a wet bed every night will provoke a so-called functional neurosis. Every case should be carefully studied and any local irritation which may exist ruled out, even in the simplest form. As an example, a tight external meatus that retains a drop of urine will act as a vicious circle. It is quite easy to see that a drop of urine retained in the meatus would have a tendency to relax the sphincter and, when a little more urine collects in the bladder, this also will be released from the same cause. Here, oftentimes, the injection of a little local anesthetic and a snip with the scissors will relieve the condition and cure the patient. Oftentimes these patients will need local treatment of the urethra to clear up a chronic urethritis.

All foci of infection should be considered in these cases, testing the reflexes and doing routine Wassermann. Many times in the relaxed bladder neck and sphincter this may be the first symptom of tabes. The nervous condition of the patient must be considered, even though many times it may be secondary.

Jacobs' report in 1922 is a most noteworthy contribution. He reports 50 cases treated with an ordinary commercial extract of the pituitary gland, such as is used in obstetric practice. According to his method one c.c. is usually given hypodermically, these injections being given three to five per week. He tabulates the following results: There were 49 cases treated, 17 being cured, 16 greatly improved and with 16 no effect.

He states that masturbation has been pointed out as a frequent cause of enuresis. This, to my mind, would suggest local irritation because the posterior urethra and especially the verumontanum is highly injected in the confirmed masturbator. His reason for the use of pituitrin is given in Tice's Practice of Medicine in the chapter on "Disorders of the Pituitary Gland." This article shows that polyuria is one of the diagnostic features of hypothyroidism. By supplying this lack of endocrin you will reinstate the balance necessary to make up a deficiency in hypothyroidism. This in turn relieves the bladder of its irritability.

Following along this same line of thought, Leonard Williams of London, England, Herodthe of Antwerp and Leopold Levi of Paris, have all called attention to the condition of hypothyroidism which they believe is a factor. They use the theory of hyperplasia and denudation of the mucous surface of the bladder as a cause for the irritable bladder. The reaction of the urine, to my mind, is not of great importance unless all other factors have been ruled out. In these cases a change of the reaction of the urine will in some instances benefit the patient.

The use of the various drugs is very unsatisfactory because of the large quantity that has to be given and the length of time the medication has to be continued.

We will illustrate the influence of local causes in producing enuresis and show the benefits that resulted from proper treatment of such causes.

CASE REPORTS

Case 1. D. K., age 18. Complaint: Incontinence of urine, habitual bed wetter. Had this trouble practically all his life.

Past history: There is nothing in the past history that has any bearing on the present condition. Has been unusually healthy.

Physical examination: Is a big, strong healthy appearing fellow. Reflexes are all normal. Rhomberg negative. Posterior urethra. The verumontanum is about the size of the tip of the small finger. Posterior surface is cliff-like and rather ragged, quite inflamed. Orifice of the ejaculatory ducts can not be made out, evidently overlapped by the enlarged veru. The rest of the urethral tract is normal.

Treatment in this case consisted of fulguration of the veru, in which one-third was removed at the first treatment. This was followed with instillations of acriflavine 1/5000 daily. Two weeks later the remainder of the veru was fulgurated down to the level of the floor of the urethra.

Patient reports that since treatment he has gone to college. His letter states he had been at school three weeks and had only wet the bed on three occasions. This is a material improvement over the former condition. A report one year following stated that he rarely ever wet the bed. Diagnosis in this case was enuresis due to two factors, lax reflexes and an inflamed veru montanum which acted as an irritating factor in the posterior urethra.

Case 2. C. S., age 26. Complaint: Dribbling after urination. It was to such an extent that his clothing was wet most of the time.

Past history: Had gonorrhea two years ago, evidently with no complications. However, he had a chronic discharge most of the time since this infection.

Physical examination: A strong, stalwart appearing young man. Physical findings negative other than the prostate which was found to be slightly enlarged and a chronic seminal vesiculitis. The veru montanum was found to be very much enlarged. Prostate was not enlarged but there was a chronic induration of the seminal vesicles. Veru was found to be about twice the normal size. Appeared chronically inflamed.

Treatment consisted of instillations of argyrol in the posterior urethra. After three weeks about one-third of the veru was fulgurated. Report after six months that he was very little improved.

Diagnosis: Posterior urethritis, veru montanitis and seminal vesiculitis.

Case 3. B. L., age 8. Complaint: Bed wetting and frequency of urination through the day. There is absolutely no warning as to when the urine is to be discharged. As a consequence the clothing is wet most of the time. This condition started after an attack of intestinal influenza about four years ago.

Physical examination: He is a small undersized boy, extremely nervous. Physical findings are negative other than a small meatus which was about large enough to admit a tooth pick. Reflexes normal. Wassermann negative.

Treatment: Meatotomy. Treatment the entire length of the urethra. Two weeks following the operation the mother reports the boy is markedly improved, stating that he rarely wets his clothing.

Diagnosis: Enuresis due to a secondary infection of the urethra, evidently prompted by the small meatus.

Case 4. R. P., age 12. Complaint: Bed wetting since three years old. Wets the bed several times during the night.

Past history: Has had very poor health as a baby. Had infantile paralysis at age of nine.

Physical examination: Rather large for his age. The odor of urine is quite noticeable while standing some distance from the patient. Physical examination negative other than the elongated foreskin which is folded over the urethra. There is a secondary infection of the urethra which proved to be a mixture of staphylococci and colon bacilli. Diagnosis: Balanitis; secondary urethritis. Treatment: Circumcision and instillation of argyrol 10 per cent. Mother states that the boy is much better. The boy is very pronounced in asserting that he is better; says that he does not have to urinate so frequently and has better control.

Case 5. W. R., age 38. Complaint: Frequency of urination and bed wetting. Has had this trouble for the past fifteen years. Condition is worse at intervals, especially during damp chilly weather.

Past history: Has enjoyed perfect health except for this complaint.

Physical examination: Strong, robust man, picture of health. All findings normal. Urethra is highly inflamed; infection proved to be a mixed infection, chiefly colon. Treatment consisted of instillation of argyrol 10 per cent. He reports marked improvement. Diagnosis: Secondary urethritis.

Case 6. V. B., age 30. Complaint: Nocturnal enuresis on two occasions during the last year, one time five or six months ago and the last occasion about one month ago. This complaint dates from a specific infection of gonococcus about one year ago. Infection ran a normal course and had no complications.

Physical examination: Strong, sturdy appearing man. Physical examination negative. Genitourinary tract reveals an enlarged prostate with seminal vesicles slightly injected. Posterior urethra inflamed. Veru montanum enlarged and inflamed.

Treatment in this instance consisted of prostatic massage and instillation of acriflavine in the posterior urethra. This treatment after three weeks greatly relieved the patient of his constant desire to urinate. Have not had a follow-up report recently.

Diagnosis: Prostatitis, seminal vesiculitis, chronic, posterior urethritis, veru montanitis.

Case 7. B. J., age 25. Complaint: Frequency and urgency which has been present during the past year. Has had nocturnal enuresis once each week for the past four months.

Past history: Was a bed wetter until seven or eight years of age. After that age he would awaken once during the night to urinate. He did this until the age of fourteen. After that he had no trouble until the past year.

Physical examination: Healthy appearing young man. Is rather quick spoken and rather nervous disposition. Physical findings normal. Examination of the bladder: There is a trigonitis and posterior urethritis. Veru is enlarged to about the size of the tip of the index finger and highly inflamed.

Treatment: Prostate was massaged and instillations of acriflavine 1/5000 in the posterior urethra and bladder. Frequency has practically disappeared and enuresis has been entirely relieved.

Diagnosis: Trigonitis, posterior urethritis and veru montanitis.

Case 8. J. L. E., age 18. Complaint: Bed wetting every night. He has had this trouble as long as he can remember.

Past history: Has had unusually good health. Physical findings normal. Reflexes normal. Was unable to pass any type of cystoscope or urethroscope, due to contraction in the membranous urethra. Catheterized by using rubber catheter.

Treatment: Dilation of the stricture of the posterior urethra and instillation of 10 per cent argyrol daily.

Patient states he has had no trouble since his last treatment. Is feeling fine. Has not wet the bed a single time.

Diagnosis: Stricture of posterior urethra.

SUMMARY

Of the 8 cases reported, 2 were cured, 4 markedly improved, 1 improved, 1 slightly relieved. The youngest of this list was eight and the oldest thirty-eight, which brings forcefully before us the fact that they do not always outgrow this disorder.

We have observed many cases especially in girls that we have been unable to relieve by local treatment, yet the few cases we have relieved revealed definite pathology that responded to treatment.

Duodenal Stasis. Arthur R. Bloom and Robert A. Arens, Chicago (*Journal A. M. A.*, Oct. 15, 1927), assert that duodenal stasis is the fluoroscopic or radiographic observation of undue retention of barium in the duodenum beyond the bulbous duodeni usually associated with dilatation of varying degree and with regurgitation often back into the cap. Stasis is not a clinical entity but is evidence of a duodenitis secondary to cholecystic disease, duodenal ulcer, chronic appendicitis, colitis, and other gastrointestinal conditions. Various symptoms, such as abdominal distress, nausea, vomiting, headaches and belching, usually seen in all gastrointestinal lesions, are the subjective evidence of duodenal antiperistalsis objectively demonstrated by stasis.

POSITIONS OF THE GASTROENTERIC VISCERA

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The surgeon performs his operative procedures with the subject in the recumbent position. The roentgenologist examines those subjects in both the recumbent and upright positions. The surgeon, unless he justly believes in the descriptions and interpretations of the roentgenologist, is at a disadvantage because of the difficulty in appreciating the forces of gravity.

The roentgenogram depicts the organ in question both with and without the maximum forces of gravity; its location and behavior are observed in all positions; it is seen and manipulated while filled completely or partly with an opaque plasma, and the patient's sensations are determined as the viscera are palpated. The surgeon actually sees the organ only in the recumbent position, when it is empty or partly filled, and while the patient is anesthetized or the viscera are desensitized. Even though the roentgenologist sees only the silhouette, he has a definite advantage over the surgeon from many angles. I wish to consider those advantages from the standpoint of surgical and radiologic cooperation.

STOMACH AND DUODENUM

The position of the stomach, I am inclined to believe, is within normal range, provided it is not outside the abdominal cavity. We, as roentgenologists, observe this organ while it is distended with an opaque substance and consequently at its lowest position while the patient stands. We see it in the dorsal recumbent and in the right lateral oblique, as well as other positions which our examination might demand. We are, therefore, better able to estimate the mobility and resiliency of the stomach. Its position and mobility varys widely according to the stature of the subject. The tall slender individual presents a low, freely movable, so-called ptotic organ, while the obese possesses a highly situated less movable stomach.

Several procedures have been devised to suspend the low stomachs in a higher plane. The results have been far from ideal, both as to relieving the patient's symptoms and in corercting the low position. In a surprisingly short length of time the stomach returns to the position it had occupied before being so rudely repositioned. It retains its new position much longer, if there is a lengthy period of rest in bed with forced feeding, following the surgery. On the other hand, this same therapeutic measure without the surgery, will cause the stomach to ascend in proportion to the statural addition. The obscure, nonclassical symptom-syndrome then changes in the patient's favor, the degree of change depending upon the relative position of the stomach and duodenum.

The position and behavior of the duodenum must receive far more attention than that of the stomach. A comparatively low stomach, in conjunction with a highly suspended distal duodenum, is an anatomic condition which is not mechanically correct. The resultant duodenal stasis interferes with the gastric drainage and produces the symptoms attributed to the gastric ptosis. The low atonic stomach had better be relieved of its overload by lowering the distal duodenum rather than by raising the stomach itself. Is it not better to lower the outlet than to raise the inlet? The former produces drainage by decreasing the internal pressure and thereby accomplishing the desired result, while the latter attempts to produce the drainage by increasing the internal pressure. A recognized mechanical law is demonstrated. At any rate, the obstruction should be corrected either by severing the ligament of Treitz or by performing a duodenojejunostomy.

I wish to recall the fact that in the so-called "ptotic stomach" the cardiac end does not descend from its normal attachment high up under the diaphragm, but the middle and distal portions(especially the latter) become elongated. Therefore, the term "ptosis" can be considered a misnomer, as the entire organ does not descend. The gastric elongation results from an overload, due to inadequate drainage because of duodenal stasis.

Whatever may be the cause of the high position of the distal duodenum, the roentgenologist is able to report the condition, while the surgeon is in ignorance of its presence. It seems, therefore, that the surgeon, before attempting to relieve a distressed stomach by a suspension procedure, should take due cognizance of the x-ray report or see for himself the fluoroscopic study. A nearer approach to mechanical reconstruction would result. I wish to further stress the importance of the consideration and study of the behavior and suspension of the distal duodenum. Traumatization of this portion of the gut because of a partial obstruction at or near the duodenojejunal juncture is a distinct gastroduodenal abnormality which is only recently being persistently called to the attention of the internist and the surgeon by the roentgenologist.

The history of medicine and surgery reveals the fact that a wave of frantic operative procedure follows the announcement of any new or fanciful surgical description. Radical or marvelous results should not be expected from the above suggested outline, if frenzied methods be followed. The suggestion is offered after observing very many cases of low stomach and static duodena, in which satisfactory results were not obtained from suspension operations. The radiologic study, together with observation of the individuals so afflicted, prompts this idea.

THE LARGE BOWEL

I wish to briefly discuss the positions of this portion of the intestinal tract because of an apparent rather general lack of an exact appreciation of the behavior of the cecum and colon by roentgenologist, internist and surgeon. Recent quarrels between the fundamentalist and the evolutionist have left open many minor points which might have shed some light upon the question. From a radiologic standpoint, the most flagrant indication of the changes occurring in the biped for his betterment is the evolution of the large bowel.

The colon is paramount in the demonstration of the changes in the human, for the advancement of the animal possessed of a mind which recognizes the difference between right and wrong. The physician has not as yet attributed the correct significance to the behavior of the colon. Roentgenologists marvel at his lack of interest, when he observes the absence of conformity in position, muscular activity, suspensions, capacity, size and length, together with many other discrepancies of the large bowel.

The behavior of the cecum and colon is an indication that previously we ambled upon fours. This is manifest in the fact that the suspension of the large bowel is loose and gravity had much to do with its position. This is especially referable to the transverse and pelvic colons which are never retroperitoneal and hence show no attempt on the part of nature to lessen their mobility. The ascending and descending portions are retroperitoneal and hence more or less fixed in about seventy per cent. This fact indicates nature's method of maintaining a control of the position of the large bowel, while the animal continued with its abdomen in the horizontal plane while ambulating. It is apparent that, if the lateral portions of the gut were not more or less fixed, the entire organ would gravitate to the dependency and become centrally located, especially in those possessed of pendulous abdomens.

The functions of the several sections of the large bowel may be described as follows. The normal stomach begins to empty immediately following the ingestion of food and continues to do so steadily until all of its contents have passed, which requires about three and one-half hours. The small bowel conveys the mixture of food and ferments rapidly, the cecum being reached within five hours and all the contents occupying the latter in eight hours. The head of the column is delayed at the hepatic flexure until all the original meal accumulates in the cecum and ascending colon. Absorption has been taking place since the meal began to leave the stomach, but rapid decrease in the bulk of the clasma is due especially to absorption of the fluid content which takes place from the cecum to the splenic flexure. The loosely attached cecum and transverse colon would, therefore, be aids to the absorptive function.

The descending colon possesses the function of a conveyer. After the bowel contents reach the iliac and pelvic colons they remain in storage, as it were, while being compacted and retained for the individual's convenience before being passed into the rectum for expulsion at a lessened immediate need on the part of subject. The rectum, which is comparatively fixed, contains the mass until added pressure from the pelvic colon compels evacuation.

I have many times observed the filled cecum occupying a position low in the pelvis and presenting a definite capacity increase, due to a lessened muscular resiliency. At operation an apparent normal organ was found. This was due to the fact that the bowel was empty and the patient was in the dorsal recumbent position. Its mobility was not evident unless it were viewed in both the upright and recumbent positions. This condition is one of the many, in which the removal of the unjustly called "potentially dangerous" appendix does not relieve the patient's suffering. The ptotic, fatigued cecum, with its attending symptoms referable to the appendix, is found in those people who for long periods of time have been subjected to that old-time residue diet for constipation.

These people are not sure they are not constipated because, as they explain, an evacuation occurs at least once in every twenty-four hours. However, an opaque meal, observed daily, without the administration of enemas or physics (a procedure which is not the routine in most x-ray laboratories) reveals the fact that the patient is unmistakably and decidedly constipated. The daily movement, instead of occurring at the thirty-six to forty-eight hour period, happens seventy-two or more hours after ingestion. The excessive residue meal, partaken at least twice daily, impounds and impacts in the cecum day after day until this organ loses its resiliency and increases in capacity. The daily movement results from increased proximal intestinal pressure rather than from bowel peristalsis. After existing for a long period of time this process causes ileocecal incompetency with an hypertrophy of the ileal musculature and the accompanying symptoms which simulate low grade infection of the much maligned appendix. Careful x-ray study has shown the error in the treatment of chronic spastic colitis by the indiscriminate administration of large quantities of nonabsorptive material, but as yet has failed universally to convince the internist and the surgeon of the value of the roentgenologist's description of the behavior of the gastrointestinal tract.

Cecal "puddling" with caput stasis is described by the roentgenologist and given little consideration by the surgeon unless the condition is correlatively of the appendix. True, the "puddling" may be due to adhesions which are obvious to the surgeon, but in those not due to adhesions appendectomy does not always in itself relieve.

Incomplete descension and partial nonrotation of the cecum and ascending colon are readily diagnosed by the aid of the x-ray but are easily overlooked when the organs are exposed, especially if observation is through a small opening. The roentgenologist can quite accurately estimate the degree of possibility of placement of these portions of the bowel by the degree of mobility and ease of manipulation behind the screen. This latter procedure gives an idea of the length of the circulatory channels.

I recall one subject, upon whom two different operations by two different surgeons had been performed to properly anchor a misplaced cecum. The placement was deemed impossible by the roentgenologist because of the apparent shortened blood vessels. The first surgeon found such to be the case as did another some months later.

X-ray study fairly accurately determines whether or not a section of bowel is retroperitoneal or is possessed of a mesentery. Excessive mobility of the portion in question, together with reduplications and angulations, suggests to the roentgenologist that the attachment is loose and that the bowel is not retroperitoneal.

Contrary to the general opinion, ptosis of the hepatic flexure, due to a long, lax renocolic ligament, is not uncommon and is often overlooked because of an inadequate x-ray study. Of all the loosely attached or ptotic viscera, the hepatic flexure should receive consideration equal to that of the static duodenum.

The mobility, length and position of the transverse colon vary considerably in individuals of like stature and in those of opposite physique. The large bowel in its entirety, as depicted by the roentgenogram, after being distended with an opaque clasma, varies almost as much as does the finger prints and most of the difference is found in the transverse colon. This irregularity, however, as far as symptomatology is concerned, is quite insignificant.

The splenic flexure is normally situated high under the diaphragm and firmly fixed. There have been and unfortunately are now surgeons who almost routinely lower the high splenic flexure. I have never studied a subject in whom I found indications for either loosening or fixing this flexure.

The function of the pelvic colon is that of an accessory reservoir. It is subjected to greater intrinsic pressure than is any other portion of the large bowel. The iliac and pelvic colons demonstrate a slowness in the progressive evolutionary changes for the betterment. It is commonly elongated, loosely attached and redundant. It becomes impacted and prolapsed and is the common site for diverticulosis with the attending adhesions. The description of its behavior is, therefore, significant to both surgeon and internist.

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VISCERAL PAIN *

A PRESENTATION OF CASES ILLUSTRATING COMMON PHENOMENA OF VISCERAL PAIN AND A DISCUSSION OF THE PHYSIOLORY OF THE INVOLUNTARY NERVOUS SYSTEM

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In an analysis of any series of cases, pain will be found as the most constant presenting symptom. Behan[1] asserts that almost 90 per cent of all diseases either begin with or have pain as a prominent symptom during their course. In spite of the fact that a proper analysis of pain arising in visceral disease is so vital a factor in arriving at a correct diagnosis, our knowledge of visceral pain is surprisingly incomplete.

Two facts were early established. First, that the viscera are not sensitive to many of the ordinary

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stimuli which cause pain in somatic tissues; second, that pain can be felt in somatic areas at a considerable distance from the diseased organ which is the cause of the pain.

It was from such facts that there arose a school of thought concerning the mechanism of visceral pain, to which we connect the names of Lennander[2] and MacKenzie.[3] These men and their followers held that there are no direct pathways for conveying pain sensations from the viscera to the brain, but that in cases of visceral disease in which pain is felt, the sensation is transferred to the common pain pathways of the somatic tissues. In opposition to this school there is a considerable mass of evidence favoring the existence of true visceral pain, and recently Davis[4] has demonstrated a series of loop relays, ascending the cord to the thalamus which may prove to be direct visceral pathways to the higher centers.

This question of how visceral disease expresses itself is of great clinical importance and leads us to other questions no less important. What are the adequate stimuli for visceral pain? What is the explanation of the epigastric pain that usually precedes the localized pain in acute appendicitis? Why should muscle spasm in the parieties be more characteristic of inflammatory lesions of the viscera than of the noninflammatory but equally painful lesions, such as the colics?

These questions are worthy of our interest and research. The following paper does not answer them but aims to present a resume of a few cases illustrating some of the commonest phenomena of visceral pain and then deals briefly with the physiologic explanation of these phenomena.

Case 1. C. B., female, age 72. An inoperable carcinoma of the sigmoid, for which a colostomy had been established about two months previously.

The patient was blind-folded and asked to report subjective symptoms during the following experiments. She reported no sensation to any form of tactile or thermal stimuli applied to either the mucosa or the visceral peritoneum. Touching the loop with strong hydrochloric acid, chloral hydrate, oil of clove, ammonia; cutting it with a knife, crushing with a hemostat, or division with an actual cautery all produced visible trauma to the tissue but failed to elicit any sensations in the subject. Strong stimulation with an inductorium produced no sensation at the time of contact, nor even when marked local blanching became apparent.

Shortly after the blanching appeared, a strong peristaltic contraction became visible in the loop and coincident with its appearance the subject reported a cramp-like pain across her lower abdomen, which she described as a "gas pain." The pain gradually subsided a few seconds after the removal of the electrodes, often before the local blanching had disappeared.

This experiment seems to show that strong peristaltic contractions may produce pain, but that the colon is insensitive to tactile, thermal and chemical stimuli. Hertz[5] states that a gastric ulcer is similarly insensitive to tactile, thermal and chemical stimuli, and Waugh[6] has reported similar findings for the human heart.

Experiment 2. In the proximal loop of the colostomy of this same subject I inserted a small rubber balloon on the end of the catheter of a Sorenson inflation apparatus. No sensations were perceived until the pressure in the balloon was raised to 80 mm. of mercury, at which time the subject invariably complained of a dull, aching pain just above the pubes. A pressure of 100 mm. of mercury maintained for a few seconds caused her to groan with pain and rub her hand over the suprapubic region some inches away from the colostomy.

This experiment seems to suggest that a certain degree of distention may be an adequate stimulus for visceral pain in a hollow organ lined with smooth muscle.

Case 2. M. M., female, age 52. This case apparently illustrates both the foregoing types of pain. The patient, a christian science practitioner, had suffered from acute intestinal obstruction of seven days duration, due to an enterolith lodged at the pelvic brim and acting like a ball-valve. For the first three or four days of her illness she had suffered from cramp-like pain of great severity and expulsive vomiting. The cramp-like pains then diminished, probably due to increasing toxemia.

Pottenger[7] says that "while toxins influence nerve cells generally, yet the peripheral expression of toxemia is that of sympathetic stimulation," in this instance causing hypomotility of the intestines. The distention then increased rapidly and when she was admitted to the hospital her complaint was of a generalized, dull, aching pain that was continuous.

I believe the early cramp-like pain was due to active peristalsis, and the latter pain to be similar to that produced by the balloon experiment and due to distention.

Case 3. V. B., male, aged 40, admitted to the hospital for repair of large right inguinal hernia, giving a history of recurrent attacks of appendicitis.

When the hernia sac was opened under local anesthesia it was found to contain the cecum and a long, definitely inflamed appendix. This appendix apparently had no tactile sensibility and was removed routinely without subjective symptoms on the part of the patient. Before returning the cecum to the abdominal cavity I exerted a strong pull on the mesentery. The patient promptly groaned, complaining of a dull, sickening pain in the epigastrium, associated with a feeling of nausea.

This experiment again confirms the relative insensibility of visceral tissues to pain stimuli and the well-known fact that traction on the mesentery is painful.

Case 4. W. O., male, age 70. History of symptoms suggesting duodenal ulcer for a period of several years and an acute exacerbation for the past five days. Sudden onset of extremely severe pain in the upper right quadrant, gradually moving downward and radiating outward to involve the entire abdomen. Pain described as a terrible burning sensation with periodic, wave-like exacerbations which caused him to vomit and made his "hands and feet tingle." His face was pale and the expression anxious. His body and extremities were wet with a clammy perspiration, his pulse rapid and thready and the blood pressure low. During the short period of observation before operation his abdominal wall became increasingly spastic, finally assuming the classic board-like rigidity. Operation revealed a perforated duodenal ulcer.

In this case we apparently have chemical irritation as an adequate stimulus for visceral pain, although the effect may be due to irritation of the parietal peritoneum, as we found the visceral peritoneum insensitive to strong chemical stimuli. The points that I wish to emphasize are the degree of muscle spasm and the marked vascular and cutaneoglandular manifestations which form part of the dangerous symptom-complex, shock, so often seen in intraabdominal catastrophes of this type.

Case 5. W. L., male, age 16. Typical clinical picture of acute appendicitis except for the fact that the pain and tenderness were almost entirely confined to the left side. An inflamed appendix was found in the usual location. It has been my observation in most cases of acute appendicitis, the majority of the pain and tenderness is expressed in the abdominal wall, in reality being a referred pain. In this case the pain was not only referred to the parieties but for some reason had been transferred to the opposite side of the cord segment.

THE INVOLUNTARY NERVOUS SYSTEM

What do we know about the nerve pathways that carry on visceral function? I shall use the term, involuntary nervous system, to include both the afferent and efferent pathways supplying the viscera. We are all familiar with the efferent portion of this supply under the name, the autonomic system, which consists of two opposing divisions, the sympathetics and the parasympathetics. We know these two divisions have their origin in the cord (or midbrain), pass to the sympathetic ganglia by preganglionic fibers, and from there by postganglionic fibers to the viscera, maintaining each organ in its proper physiologic state by their interacting and opposing tonus.

Our knowledge of the afferent side of the involuntary nervous system is less complete. We have identified spindles in the smooth muscle, Pacinian corpuscles in the mesentery, and various types of free endings in the loose connective tissue of the visceral peritoneum, organ capsules and epithelium, all of which doubtless represent visceral afferent neuron endings. Their pathways are even less well identified. In the spanchnics large myelinated fibers, about 20 microns in diameter, have been found, whose cells appear to lie in the spinal ganglia. We think that these represent afferent neurons and that their endings in the viscera are Pacinian corpuscles and possibly other types of sensory terminations. Their connections in the cord we do not know but may infer that they are connected with the chain pathways described by Davis.[4]

The most important fact concerning the afferent side of the involuntary nervous system, based on physiologic rather than anatomic data, is that all afferent neurons have their cell bodies in the spinal ganglia (or physiologically similar ganglia, such as the g. nodosum for the vagus). This fact implies that *every visceral afferent neuron is in close anatomic relation with somatic neurons in the spinal ganglia and cord, and that all visceral reflexes must be completed through the central nervous system.*

PHYSIOLOGY

In visualizing the physiology of the involuntary nervous system, then, we conceive of a constant stream of impulses from the viscera entering the cord and there spreading out fan-like* over the autonomic system to the various organs to secure that perfect harmony and coordination of secretory and motor function so essential to health.

PATHOLOGIC PHYSIOLOGY

In case of visceral disease this smooth coordination may be disrupted. Impulses of pathologic intensity from the diseased organ may directly affect other visceral or somatic neurons in the spinal ganglia or cord. The hyperirritable reflex arc may result in overactivity of the organ until fatigue or functional insufficiency is produced. No longer able to discharge their impulses normally, these neurons affect adjacent neurons, resulting in a spreading out of pathologic impulses to other organs (irradiation). In this manner we might well account for the reflex disturbances of other visceral organs, vasomotor and cutaneoglandular involvement so commonly observed in disease of visceral origin.

Should the irradiation involve somatic neurons, sensations would reach consciousness which would be ascribed to the somatic areas supplied by those particular neurons. As Behan[1] reminds us, "it should always be borne in mind that it is immaterial what part of the nerve circuit is affected, the pain will always be interpreted as coming from the peripheral distribution of the nerve fibers involved." If, as often happens, the somatic neurons involved in this irradiation are sensory neurons from body wall areas at a distance from the diseased viscus, the subject will experience the phenomenon, termed referred pain.

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* The fan-like spread of the peripheral pathways is suggested by the research of Ransom(8) who counted the preganglionic fibers of a cervical sympathetic trunk and compared it with the number of cells in its cervical sympathetic ganglia. The ratio was 1 to 32.

Persistence of the irradiation may result in somatic "hyperesthesia" or "hyperalgesia." Miller and Waud[9] have shown that continued electric stimulation of the superior mesenteric nerve of decerebrated cat resulted in a change in the abdominal reflex, both in degree of response (facilitation), and a widening of the area from which the reflex could be elicited, which they have attributed to the hypersensitive condition of the somatic pathways, following long continued irritation of sympathetic neurons.

CONCLUSIONS

A brief resume has been presented of a few cases illustrating some of the phenomena of visceral pain. It seems that both distention and strong peristalsis are capable of eliciting pain in hollow organs, whose walls contain smooth muscle. These findings are in agreement with Hertz,[5] who says, "I believe that tension is the only cause of true visceral pain."

Cases have been mentioned which exhibited viscerovisceral and viscerosomatic reflexes, resulting in referred pain, muscle spasm and hyperesthesia.

The brief discussion of the involuntary nervous system attempts to explain the physiology of this system and interpret how the above phenomena may system and interpret the phenomena of visceral pain.

The close association in the spinal ganglia and cord of the visceral and somatic afferent neurons was pointed out.

The overflow of visceral impulses into somatic paths appears to occur at these points and is probably due to an irradiation of pathologic stimuli which are not permitted to discharge themselves in a normal fashion.

BIBLIOGRAPHY

1. Behan, R. J.: Pain. 1920.

2. Lennander, K. G.: Centralbl. f. Chir., 1901, XXVIII, 209; and J. A. M. A., 1907, XIIX, p. 836.

3. MacKenzie, J.: Symptoms and Their Interpretation. Loudon, 1920; Angina Pectoris, Oxford University Press, 1923.

4. Davis, L. E.: Pathway for Visceral Afferent Impulses within the Cord. A. J. Phys., Vol. 59, No. 1, Feb., 1922, p. 381.

5. Hertz, A. F.: Sensitivity of the Alimentary Canal in Health and Disease. Lancet, May 6, 1911, p. 1193.

6. Waugh, G.: Sensibility of the Heart (Human Experiment). Lancet, Nov. 21, 1925, p. 1054.

7. Pottenger: Symptoms of Visceral Disease, 1919, p. 295.

8. Ranson and Dillingsley: Comparative Neurology, 1918.

9. Miller and Waud: Visceromotor Reflexes. A. J. Phys., Vol. 73, p. 329.

ACUTE CERVICAL ADENITIS

AN ADJUNCT TO THE SURGICAL TREATMENT *

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All doctors know that, since the introduction of ether anesthesia, the science of surgery has progressed with astonishing rapidity. Intricate operations for the repair of tissues have been devised. Whole organs have been removed with little fear. In fact, progress has been so rapid and so fruitful that now, when we remove much tissue with so little hesitancy, we are beginning to question whether it is always the best procedure to sacrifice so much. In other words, the pendulum has swung toward the opposite side, and in many cases we now try to save a patient an operation if possible. We are trying to save organs and parts of organs, and to preserve the normal physiology of the body as much as possible. To do this, all conscientious surgeons are ever ready to consider new ways of procedure, providing they seem worthwhile.

On the other hand, the psychology of the patient and of his relatives must also be reckoned with. People have a fear and even a horror of any surgical procedure. This is even more enhanced, when a general anesthetic is required. Coupled with this, failures of surgery in the family or bad end-results following operations upon others tend to make the patient or his family look to some other means which seems less radical to them, and brings less danger as they see it.

There is no better example of bad surgery than in the sacrifice uselessly of so many functionating ovaries as was often done in past years. The sacrifice of the organs, the disturbance of normal physiology and the premature menopause with its ill effects make one realize that now is the time for surgeons to stop and reflect, to preserve and to save. With these things in mind, this paper is written. As Da Costa once said, "It is as necessary to know when not to operate as it is when to operate."

ETIOLOGY, SYMPTOMS, DIFFERENTIAL, DIAGNOSIS

First, let us review the general aspects of the subject involved.

Etiology. Acute cervical lymph adenitis may arise from any infective process within the area drained by the lymph gland involved. Such things as eczema of the scalp, pediculosis, ear infections, skin lesions, cracked lips, caries of the teeth, pyorrhea of the gums, tongue and throat infections, tonsillitis, rhinitis and sinus infections are the common offenders. Cold or injury may predispose to it. Infection from contiguous structures or the blood stream may be the inciting factors. Tuberculosis, syphilis or glanders may likewise cause cervical adenitis.

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* Read before the Fifty-third Annual Meeting of Oregon State Medical Society, Salem, Ore., Sept. 1-3, 1927.

Pathology. The pathology is that of enlarged glands, the result of hyperemia and exudation. The surrounding tissues show periadenitis with adhesions, a thickened capsule and dense connective tissue.

Symptoms. The patient may have a chill and a fever. The glands are tender and palpably enlarged. In severe cases the overlying skin becomes red, edematous and adherent. The glands weld into one mass, which may finally soften, owing to destruction and pus formation.

Differential Diagnosis. Here the big problem of lumps in the neck must be considered. In general, are we dealing with inflammation, tuberculous glands of the neck, or masses of other sorts such as tumor, malignancy, leukemias, Hodgkin's disease, etc.? Are the glands involved superficial or are they glands of the deep chain? All these things must be differentiated before treatment by physical means is considered, because this type of treatment is suggested for only one type and that is the acute cervical adenitis, due to secondary infection of the true pyogenic variety.

As for the inflammatory type, here the history of the case is invaluable. In some cases the infection may be actually demonstrated in the gums, teeth, tonsils, sinuses, from one of the acute exanthemata, etc. Other times we have only a history of the primary infections, the original focus already being healed, and thus we are unable to see it. In this latter group often times we can only differentiate by a history of previous infection or by the exclusion of everything else. In those cases of gumma of the neck, originating in the lymph glands, the original chancre can be demonstrated near the involved area, or a former scar of it can be seen. This form of syphilis is usually early in the disease or during its acute stages. Gumma of the neck is always unilateral. Often times the Wassermann test is a valuable indication, although at other times it affords no information whatsoever.

In tuberculous glands of the neck a very complicated problem confronts one. Some tuberculous glands are movable, some are fixed. Some are elastic, some are hard, some are soft and even fluctuating. Others are coalesced. All of these qualities may resemble other masses in the neck and so present a hard problem of differentiation. Specifically, however, noncaseating tuberculous glands are usually movable. They are elastic, give a history of long duration, present very little pain and are free from the skin above. Caseating tuberculous glands, on the other hand, are usually tender and nearly always fixed and anchored. They are very firm, even very hard at times. Some are coalesced into masses and fixed. The overlying skin is close and adherent, so that when one pulls on the skin above, the underlying structures are pulled with it, by almost visible underlying bands of adhesions. Later any of these types may become secondarily infected by pyogenic organisms and show all the symptoms of acute cervical adenitis with redness, edema, etc. Cold abscess may even develop. The latter is often very hard to differentiate, especially if it lies in the deep chain and beneath the muscles, where fluctuation is hard to elicit and can often only be distinguished by aspiration with needle and syringe. Another point of special importance in tuberculous glands of the neck is the fact that rarely are they of the mediastinum, demonstrated by x-ray along with tuberculous glands of the neck. Therefore, a negative roentgenogram for demonstrable lymph glands in the chest is a very valuable point in the differentiation of this condition.

In leukemia the blood picture, of course, is the important differentiating factor.

In Hodgkin's disease we have a general enlargement of many glands. Some may be soft and resemble nonsuppurating tuberculous glands of medium size, and in this case can be told only by biopsy or by their presence in a mediastinal roentgenogram. Hodgkin's disease almost always shows mediastinal involvement, whereas tuberculous glands of the neck rarely do. Furthermore, glands in Hodgkin's disease may be large, hard movable glands which resemble caseating tuberculous glands. In this case, however, Hodgkin's glands are freely movable, hard, have distinct outlines, are very prominent. They are not fixed as caseating glands are, except in the very late stages. The skin is never adherent over them Hodgkin's glands rarely ever break down and almost never present fluctuation or pus formation. Fever may be present in both. Often times the blood picture may differentiate the condition.

In malignancy of the neck the striking thing is the early appearance of pain. The glands are very hard, coalesced, irregular and fixed. One should always explore the nose, mouth and accessory sinuses

INFRARED AND ULTRAVIOLET RAY TREATMENT OF CERVICAL LYMPH GLANDS

Case	Exposures U.V. Tonic Infrared	U.V. Local	Localization	Gland Size	Pain and Tenderness	Extravasation of Pus	Operation
1	12	4	Complete	Enlarged	Disappeared	None	None
2	18	6	"	Reduced	"	"	"
3	18	6	"	"	"	"	"
4	20	6	"	"	"	"	"
5	8	3	"	"	"	"	"
6	45	24	"	Enlarged	"	"	"
7	12	4	"	Reduced	"	"	"
8	12	4	"	"	"	"	"
9	15	5	"	"	"	"	"
10	42	15	"	Enlarged	"	"	"
11	15	5	"	"	"	"	"
12	8	3	"	Reduced	"	"	"
13	8	3	"	"	"	"	"
14	6	2	"	"	"	"	"
15	4	1	"	"	"	"	"
16	12	4	"	"	"	Yes	One
17	4	1	"	"	"	None	None
18	44	14	Delayed	"	"	Yes	One
19	42	14	"	"	"	"	"
20	12	3	Complete	"	"	None	None
21	9	3	"	"	"	"	"
22	7	2	"	"	"	"	"
23	27	8	"	Enlarged	"	"	"
24	17	5	"	Reduced	"	"	"
25	13	4	"	"	"	"	"
26	15	4	"	"	"	"	"
27	12	4	"	"	"	"	"
28	9	3	"	"	"	"	"
29	8	2	"	"	"	"	"
30	9	2	"	"	"	"	"

with a bronchoscope or other visionary instrument for any small primary growth. Here, as in Hodgkin's disease and tuberculous glands, a biopsy may be the only means of a true differentiation. The sternal sign of pressure over the manubrium will almost always elicit pain in malignancy of the neck, and therefore is a valuable sign in differentiating malignancy from Hodgkin's disease.

TREATMENT

Treatment of the purely inflammatory type of acute cervical adenitis may be divided into three main headings: (1) Medical, (2) physical therapy, (3) surgical.

Medical treatment is both general and local. As general eliminants laxatives are given and water is forced. For local application iodine, belladonna, mercury, ichthyol, guaiac and similar ointments may be used as counterirritants. Hot compresses may be tried. Rest, fresh air, tonics and nourishing food build up the resistance of the patient. No specific medication is of any particular value, except in syphilitic adenitis, where neosalvarsan and mercury are the choice.

Treatment by physical therapy is new. It is fast becoming an important factor in these cases. I use ultraviolet light (the short wave technic) and produce marked hyperemias over the area involved. These treatments consist of one to two minute applications of the water-cooled lamp at approximately one inch distance, and are given as a rule biweekly. After the reaction subsides and desquamation is about gone, that is the indication for another one to be given. Supplementing these treatments, I give general tonic doses of ultraviolet light (long wave technic) and also one-half hour exposures of infrared light at maximum toleration of heat. These later treatments are given daily. In tuberculous adenitis many men use x-ray, but having no experience with this type of treatment myself, I will only mention it in discussion.

As for surgery in this type of case the first thing naturally is to remove the primary focus of infection. If the tonsils are the offenders, they should be removed, likewise any other primary focus, whatever it may be. If physical therapy does not prevent the breaking down of glands and extravasation of pus, then drainage must be instituted. In those glands which do not return to normal size and a disfiguration is present, the chain may be removed completely.

RESULTS

It will be noted from the above chart that cases may be divided into four main groups. There is the average case with the general run of symptoms, that is, with the glands markedly enlarged, some coalesced, and with the presence of redness, edema, pain and tenderness. Then there is a group of cases, in which all the symptoms are very much aggravated and results are harder to obtain. In these cases the glands as a rule are much larger. There is more coalescence, redness and edema. Pain and tenderness are greater. However, it should be understood that the size of glands, the amount of adhesions, the intensity of pain, etc. are no indication of the final result to be obtained. Some cases with glands greatly enlarged and with the severest of symptoms quieted down even more rapidly than some of those of less size and less severity.

There is also a group in which the symptoms are slightly less than average and results are very easily obtained. These cases show the same symptoms as the others but to a lesser degree. Especially is this true of redness and edema. Lastly, there is a group in which all symptoms are present, but which all subside very quickly. In these cases the glands enlarged very little and there was no coalescence. In this latter group it is a question whether physical therapy did a great deal, because symptoms subsided so quickly and the question arises whether they might not have improved without any treatment.

It will also be noted that for the average case three to four water-cooled ultraviolet light treatments were required, given biweekly. Also that twelve to fifteen infrared treatments and tonic doses of ultraviolet light were given daily. This means that one and one-half to two weeks were required for all symptoms to subside. In those cases which were more severe five to six water-cooled ultraviolet light treatments were required and fifteen to eighteen infrared treatments and tonic doses of ultraviolet light. That means that these cases quieted down in from three to four weeks after treatment was instituted. In mild cases two water-cooled ultraviolet light treatments were required and four to six infrared treatments and tonic doses of ultraviolet light. In these cases symptoms subsided in approximately one week. Those cases which quieted down with one water-cooled ultraviolet light treatment are disregarded because they might have improved without any treatment.

In regard to localization of the inflammation, it can be said that this is practically complete in all cases. In three of my cases there was extravasation of pus. However, only one broke down under the treatment instituted. One was received after extravasation had already taken place, and one after drainage had been instituted. This latter case promptly stopped draining under physical therapy treatment, just as all infections do under the same treatment. Therefore, it may safely be said that, if these cases are seen early enough, localization can be accomplished; if not, drainage at least is more promptly stopped than if the wound is allowed to drain only and no lights used.

It was only in the most severe cases that the size of the glands did not reduce with the subsidence of the inflammation. In two cases the size reduced but not quite to normal. However, they were sufficiently small that no disfiguration was present and no operation was needed. In two cases an operation should have been done to remove a large coalesced mass of lymph glands, but the patients refused surgery.

As for pain and tenderness over the area involved, there was a gradual disappearance as the treatment progressed. This was even true of the severest cases. As the size of the glands went down, the pain and tenderness seemed to subside in direct proportion. From this one can readily conclude that pain and tenderness were materially reduced by the treatment.

In the four cases which came to operation under my care, not one was operated upon a second time. This suggests one of two things, either the preoperative treatment localized the inflammation and infection sufficiently, so that no reoperations were required, or the operations were exceedingly thorough. In view of all the advantages of physical therapy treatment stated above, I feel that the former hypothesis is true rather than the latter.

It is interesting to note that not one case of those I have seen and treated by ultraviolet light and radiation were left with lymphangiectasis, as is often the result with cases of tuberculous glands treated by the x-ray. This is a point which bears further investigation in the treatment of tuberculous adenitis by the aforesaid physical means.

SUMMARY

The present tendency in surgery is to save a patient an operation, to save organs, preserve the normal physiology of the body, and also to consider any new adjunct, providing it sounds reasonable and worthwhile. On the other hand, patients and their relatives are always trying to escape operations. With these things in mind, provided a correct diagnosis is made, ultraviolet light and radiation are suggested, not to supplant all medical and surgical means, but to aid and fortify them. These modalities tend to prevent the breaking down of glands, and the resultant extravasation of pus, tend to localize the infection, reduce the size of many glands and prevent repeated gland resections in most cases of acute cervical adenitis due to pyogenic infection.

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ENCEPHALOCYSTOCELE

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In dealing with those unusual surgical conditions, where principles rather than established technics should be followed, so much will depend on the individual judgment and ingenuity that the best approach to a successful execution may be reached through formulating a number of plans, for such planning is certain to keen the wits and thus promote not only the vision of the native ingenuity but whatever experiences have gone to make up the underpinning of the judgment. Thus may a problem, which at first sight seems baffling, be made to yield into one of possible solution.

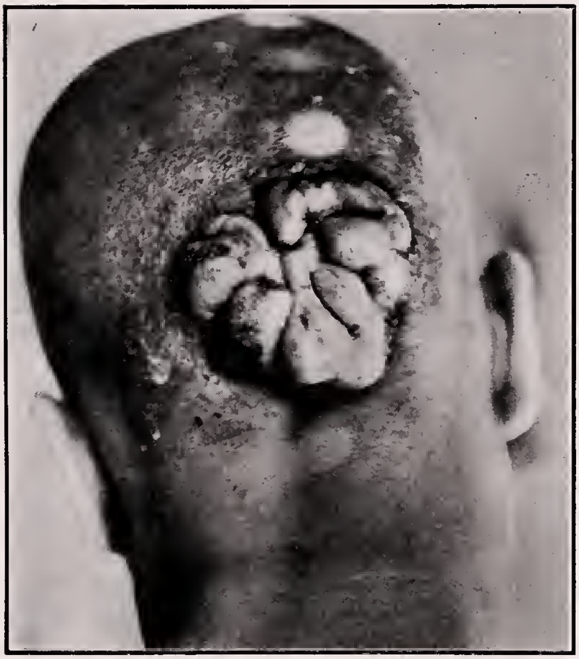

Fig. 1.

If we turn to figure 1, such a problem may, with many aspects of defiance, be seen. Its lobulated formation immediately suggests cerebral convolutions. The entire mass pulsates. Press the finger tips into and around its margin and a distinct bony edge is clearly defined. The size of the protrusion represents the size of the portion of the occipital bone that is lacking. At the junction of that long transverse and the short vertical fissure is the orifice of the sinus, from which there is an ooze of cerebrospinal fluid. The history of this anomaly goes back to the birth, when, as the mother of this boy tells us, it was free from lobules.

The hair growing from the skin overlying it was exceedingly scant, and much finer in texture than that which covered the normal scalp. Between the first and second year it was noticed that fissuring was beginning to appear. This continued till, about the fourth year, complete lobulation had ensued. In all other respects he was a normal child.

At the age of fifteen, the first leakage of cerebrospinal fluid took place. It recurred at irregular intervals, to endure for periods that would last from three to ten days. As the seeping continued, he grew dull and stupid. All interests waned. Cessation of the leakage was followed by severe headache and irritability of temper. A few days of this and the normal trend would be regained. Once again he would assume interest in school and boyish sports. A month, two months, longer perhaps, with all going well when, and of a sudden, the leaking would recur and the vicious circle would be reestablished.

At the time he was operated on, he was sixteen years old (his present age), and in the opinion of his parents there has been no change in the size of the mass since the time of his birth. "His head has grown," they say, "but, save for the creasing, the protrusion has remained unchanged."

When facing the congenital anomalies of the cranium there is much in the differentiations to puzzle over. A dermoid of the scalp, occurring singly, and always in the young, may be mistaken for a cephalocele because of its depth and close attachment to the meninges. The skull beneath it may have become thinned and cupped into a saucer-like depression, or it may have been entirely absorbed and thus permit a transmission of the cerebral pulsations. Fibrous growths of the scalp are very rare, yet they do occur, but when they do, no defect of the bone coexists. Cushing classifies the developmental anomalies that pertain to the brain, meninges and skull with similar lesions over the spinal region (spina bifida) and makes the statement that, "they are all more or less associated with circulatory disturbance of the cerebrospinal fluid."

Since it is known that a dermoid of the scalp is capable by the pressure it exerts of absorbing the bone that happens to be beneath it, we may call it pressure atrophy. It is not unreasonable to believe that the dura as well may likewise be made to yield, even onto the very pia mater. But, granting this, would leakage of the cerebropsinal fluid into the overlying dermoid ensue? No, it would not, and here we have a most reliable means of differentiation, for that which brings the cerebropsinal fluid to the periphery is by all observers believed to be of central origin.

Cushing makes this very clear when he says: "It is probable that the defect through which the protrusion takes place is not the primary factor leading to the hernia, but rather that some intracranial condition, leading to increased tension and associated in some way with the cerebropsinal fluid, was present during fetal life."

True meningocele and encephalocele are said to be of rare occurrence. Encophalocystocele is the more common, and according to many careful observers constitutes the greater number of the occipital herniæ. But when a plausible diagnosis is reached, the problem of correction, view it as one may, seems to bristle with formidable possibilities.

The periods through which the fluid had been escaping had become longer. The intervals of cessation had grown shorter. Havoc threatened. There was need for something to be done, but just what that something was or should be was not clear.

Would denudation of the integument induce a further protrusion of the brain? Would such an attempt invite a further loss of the fluid? Could the hernia be reduced to a level that would permit the transplanting of some inelastic covering? If so, then what was to be used in effecting such a covering? A transplant of the lower portion of the shoulder blade was considered. Pressure over the mass with the palm of the hand revealed a laxity that promised the probability of reduction. But with this, could the opening through which the fluid had been erupting be closed to remain closed?

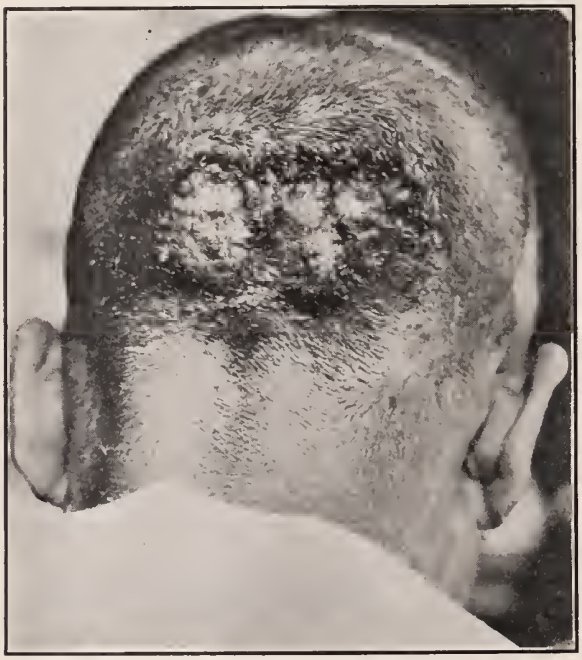

Fig. 2.

Two schemes were finally evolved. First, we would denude the entire mass. This would be begun by working from the center outward, turning back from each lobe a flap. As each flap was made free, it was covered in moist gauze and clipped. Beginning at 8:30 a.m., the opeartion was completed at 11:30, most of the three hours being taken up in the dissection of the deep fissures from the meninges.

When at last the entire area had been made free and the dura was seen to be very thin, it was soon apparent that the protruding brain would willingly, by the most gentle pressure, compress itself within the level of the normal contour. It was also noted that this compression seemed to have the tendency of closing the sinus. At this point the plan of transplanting the shoulder blade was abandoned and that of sliding scalp and occipitofrontalis with its aponeurosis was carried out instead.

Two longitudinal incisions at either side permitted the scalp and muscle to be drawn from below upward and from above downward. No difficulty whatsoever was met in mobilizing and sliding the scalp, occipitofrontalis and aponeurosis. A very satisfactory reward for what promised to be a likely disappointment. Prior to the operation which was performed at Saint Francis Hospital, Honolulu, on May 13, 1927, so much of the cerebrospinal fluid had escaped that an intracerebral negative pressure was conjectured as a plausible explanation of the readiness with which reduction obtained.

Fig. 2, taken one week subsequent to the operation, very nicely shows to what extent the scalp and underlying aponeurosis was mobilized and slid into its new position.

At this writing, September 28, the boy is in excellent health. The leakage of the cerebrospinal fluid has not recurred and the patient is in school and able to take his place with others.

Cardiac Disturbances in Goiter. More than 300 cases in which auricular fibrillation has been associated with hyperthyroidism have been reviewed by John Phillips and J. P. Anderson, Cleveland (*Journal A. M. A.*, Oct. 22, 1927). The occurrence of auricular fibrillation does not appear to bear any relation to the type of goiter that may be present, but rather it appears to depend entirely on the presence and duration of the hyperthyroidism. It is most frequently associated, however, with colloid goiters with adenomatous nodules. Auricular fibrillation is most frequently associated with hyperthyroidism in persons over 45 years of age in whom some degree of arteriosclerosis is already present. Adenomas of the thyroid gland appear to produce cardiac irregularity in some cases before hyperthyroidism has been manifested by an increase in the metabolic rate. The authors urge that in every case of goiter, whether or not hyperthyroidism is manifested, an examination of the heart should be made to determine the presence of any cardiac irregularity, as it is of utmost importance that treatment be instituted before serious heart injury has taken place. One hundred and twenty cases of auricular fibrillation associated with hyperthyroidism are analyzed. In seventy-five of the cases in which operation was performed end-results could be obtained, and in forty-three, or 60 per cent of these cases the action of the heart became regular after the removal of one or both lobes of the thyroid gland.

Diagnosis of Tuberculosis in Child's Chest. It is the belief of Kennon Dunham, Cincinnati (*Journal A. M. A.*, Oct. 22, 1927), that when there is a history of exposure, rapid pulse, low grade fever, underweight and poor nourishment in a child, there is every reason to act without waiting for further evidence on which to base a definite diagnosis of tuberculosis. Such a child at any age under 12 is "potentially tuberculous" and should be so treated; i.e., with complete bed rest, correct nourishment, open air, all infection removed and all deformities corrected. This treatment should be continued until the child has no fever and the weight is above average. Dunham recommends that such children should be so treated, whether they have a history of exposure or not, because many of them are infected from unknown sources. One should not wait until the existence of pulmonary tuberculosis can be proved; then it is too late. Physicians and nurses should make the statement that the child is "potentially tuberculous" and treat that child accordingly.

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EDITORIAL

CHANGING VIEWS REGARDING ACUTE YELLOW ATROPHY OF THE LIVER

When Rokitansky in 1842 described for the first time a peculiar condition of the liver in fatal cases of icterus gravis, he opened a field of pathologic study which ever since has remained fraught with controversy. Roman*, in a recent and exhaustive review of the subject of acute yellow atrophy of the liver, quotes Rokitansky's original report. This described an organ that was flabby, mushy and often reduced to one-half or one-third its normal size. The discoverer emphasized the yellow color of the liver, both upon the surface and in cut section. In doing this he introduced into medical nomenclature a term which has long since been proved a misleading one, but which the reviewer confesses will probably stand until a more accurate name is devised. Other clinical pathologists, following upon the heels of Rokitansky's work, found that, in place of the yellow color due to extensive necrosis of parenchymatous cells, they were much oftener able to demonstrate an organ that was either red in color, or that had alternating areas of red and yellow. In a third type of case, in which the clinical history suggested a more chronic process, the liver was found to be filled with gray-yellow or gray-green well defined masses which protruded under the capsule in the form of nodular tumors.

Three chronologic stages in the pathology of this condition are now generally recognized. The earliest of these is the yellow atrophy as described by Rokitansky, in which there is hydropic and fatty degeneration and later total destruction of large areas of liver cells. So rapid is this change that the liver may become atrophic in three to five days. The second or red stage is represented microscopically by engorgement of the necrosed areas by intact and disintegrated red blood corpuscles and granular debris. This apparently indicates an early attempt at removal of the destroyed elements. The nodules which are characteristic of the third stage consist of atypical hepatic cells that are lacking in the usual lobular arrangement. There exists at present a dispute as to whether or not this regenerated parenchyma arises from surviving liver cells or from new formed bile ducts. Herxheimer and Blum even deny the existence of new formed bile ducts in the areas of regeneration. They believe that the tubular structures which have been regarded as new bile passages are merely persisting trabeculæ of liver lobules. Roman emphasizes the fact that in all, excepting the most rapidly fatal cases, the pathologic findings do not represent any one of the three stages just mentioned, but rather a combination of them. The predominating picture in the liver in any one case depends on the age of the pathologic process.

A disease which can within the course of a few days reduce a large organ such as the liver to one-third its former size is deserving of more than ordinary interest and speculation concerning pathogenesis. It early became clear to investigators that the first stage of acute yellow atrophy represented an atypical necrosis of the liver parenchyma. The cells appeared literally to be dissolved and their remains rapidly carried away. Following the demonstration of the process of autolysis by Salkowsky and Jacoby, it was discovered that the liver is itself capable of autodigestion, following removal from the body under aseptic conditions. Wells and other chemical pathologists, in their analyses of the liver in acute yellow atrophy, have found end-products similar to those encountered in ordinary postmortem autolysis of hepatic proteins. The clinical finding of accumulation of amino acids in the blood also lends support to the autolysis theory. Roman states that if one accepts recent views on the extrahepatic formation of bile pigment, the jaundice in the disease under present discussion is easily explained by failure of the liver cells in their function of excreting bilirubin. The nature of the agent which brings about the rapid autolysis of the liver is, according to Roman's survey of the literature dealing with this point, entirely unknown. It is undoubtedly a metabolic or bacterial toxin, which is capable of damaging liver cells without at the same time impairing the activity of the autolytic enzymes.

In his review, Roman indicates that acute yellow atrophy of the liver is an anatomic rather than a clinical entity. It is distinctly a condition affecting persons in the first half of life. Even newborn infants are not exempt. Previous damage to the liver would appear to act as a predisposing factor. This may explain the relation of the pregnant state to acute yellow atrophy. In certain toxemias of pregnancy, such as pernicious vomiting, necrosis of liver cells has been found. In addition, Hofbaum has described fatty degeneration of the centers of liver lobules in supposedly normal pregnancy. A relation of other infections to acute yellow atrophy of the liver has frequently been demonstrated. An increase in the incidence of this condition during the period of epidemics of catarrhal jaundice has been reported. Weil's disease, due to infection by spirocheta icterohemorrhagica, may be accompanied by liver atrophy, although certain pathologists hold that this spirochete per se can not produce the typical changes of the latter condition.

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* Roman, Benjamin: Acute Yellow Atrophy of the Liver, Arch. Path., 4:399 Sept., 1927.

Attempts to find an etiologic bacterial agent have been generally disappointing, in spite of the fact that acute yellow atrophy is known to follow in the wake of a considerable variety of infectious diseases. Roman attaches considerable importance to Opie's demonstration in animals that a dose of hepatic poison, which is in itself inadequate to produce changes in the liver, will in the presence of bacterial infection cause widespread destruction of that organ. The fact has long been known that certain poisons, notably phosphorous and chloroform, can produce changes in the liver comparable in many respects to the antomic picture of acute yellow atrophy. Investigators repeatedly have produced experimental poisoning of the livers of animals in efforts to disclose facts which might shed light upon this obscure condition.

Prominent among other substances which are capable of producing fatty degeneration of the liver may be named chloroform and certain poisonous mushrooms. In protracted cases a picture that resembles acute yellow atrophy is commonly encountered. The occurrence of a swollen fatty liver in cases of liver damage due to known hepatic poisons has raised the question as to whether or not the liver may present a similar appearance in the earliest stage of acute yellow atrophy. This question, Roman states, no one has been able to answer. Minkowski denies any specific action in either the known or unknown hepatic poisons which produce the pathologic entity known as acute yellow atrophy. He believes that almost any substance which is capable of injury to the liver may induce the characteristic autolysis of this organ. Roman contends that, if one accepts Minkowski's views, the frequent occurrence of acute yellow atrophy of the liver in syphilis, epidemic infectious jaundice, pregnancy and hepatic cirrhosis is easily explained. The number of idiopathic cases is then reduced to a minimum. For these Eppinger has assumed the possibility of a toxin of gastrointestinal origin. The reviewer, however, concludes that such a contention is in the present day mere speculative theory.

A QUESTIONABLE MEDICAL INSTITUTION

An attempt is being made in Washington to sell stock in "Dawnland Maternity Inn, Inc." As this institution is being exploited as a medical organization, with an attempt to interest the public to invest money for its promotion, it is timely to inquire into the personnel of its backers and to learn something of its history and claims of scientific procedures. It is stated that this hospital and the secret mode if treatment on which it is based comprise a "discovery" of Dr. Harvey T. Cooke of Los Angeles, Calif. This physician, sixty years of age, graduated from California Eclectic College in 1915. This institution had a checkered career from its organization in Oakland in 1879, whence it was removed to San Francisco in 1887, suspended in 1906 and reorganized in Los Angeles in 1907, becoming extinct about ten years ago. A reciprocity license in Washington was refused Dr. Cooke by reason of his presentation of a diploma from a Class D medical school. In Los Angeles he has paid particular attention to anesthetics in hospital and private work. His coadjutor and fellow promotor in Washington is Dr. Willard G. Palmer, of Seattle, homeopathic physician, one of the first disciples of Abrams in exploitation of his electronic system, more recently an exponent of Koch, of Detroit, and his "cancer cure." The chief function of these two systems of practice is the abstraction of large sums of money from the victims' bank accounts.

Herewith are some facts regarding the system of maternity hospitals which it is proposed to establish in the cities of Washington. The Dawnland Maternity Inn has been incorporated by Cooke, of which he states the chief asset "is the contract giving the corporation the exclusive right to practice within the state of Washington painless, conscious childbirth and painless, conscious surgery as developed and perfected by Dr. Harry T. Cooke, M.D., of the city of Los Angeles, California." It is reported from Los Angeles that painless childbirth is obtained by use of novocaine spinal anesthesia. It is obvious, therefore, that this Cooke discovery is simply a long established surgical method, well known to the medical profession and discarded as a routine practice on account of its dangers and possible fatalities. It is reported that deaths have already occurred from its use in Los Angeles.

The articles of incorporation provide for a capitalization of $480,000, consisting of 9600 shares of common with 9600 of preferred stock, each of a par value of $25.00. Already Palmer and his associates have appeared before commercial bodies in an effort to promote the sale of this stock, the bait, of course, being the great boon to be conferred upon prospective mothers through painless, conscious childbirth. In order that the public may not be deceived and imposed upon by these promotors, publicity should be given to the facts concerning this enterprise. It is natural to suppose that prospective purchasers of stock will consult their physicians as to the standing of this corporation and the reliability of its claims for scientific service. The purpose of this discussion is to excite sufficient interest in the profession of the state to inspire their posting themselves regarding these claims so that they may provide the desired information.

RESULTS OF THE BASIC SCIENCE ACT

The Basic Science Act, which passed the last session of the Washington legislature chiefly as a result of efforts on part of the Public Health League, has been in effect a sufficient length of time to demonstrate results already accomplished and to suggest what may be anticipated from it in the future. Its essence is the requirement that all persons caring for the sick must pass an examination at Olympia in the subjects of anatomy, physiology, chemistry, pathology and hygiene, which are recognized as the foundation of all methods of treating human ailments.

Reports from the Department of License at Olympia show that medical applicants are successfully passing in these subjects, with a fair percentage of osteopaths. Chiropractors, sanipractors and other forms of drugless healers evidently have been conspicuous by their absence. In fact, from some of the recognized legal forms of cultism there have not appeared of late a sufficient number of applicants for license to make necessary an examination. It is notable that there has come about a marked reduction in the number of healers of various sorts who have been flocking to Washington recently in large numbers. There is every reason to believe that the administration of this Act will have a permanent effect in purifying the various classes of practitioners who in the future will attend the sick in this state.

CHANGE OF TITLE

During the past five years the American College of Physicians has published *Annals of Clinical Medicine,* a monthly magazine devoted to the presentation of papers read before the meetings of the College. Beginning with the July issue the title of the journal has been changed to *Annals of Internal Medicine* which, it is considered, will more exactly represent the line of work to which it will be devoted. Dr. Alfred Scott Warthin, University of Michigan, will continue as editor, and the journal will be printed by the Ann Arbor Press. While the magazine will especially stress papers read by the members of the College, suitable material will be accepted from other sources. The cultural side of medicine will be represented, as well as the scientific and purely clinical. It is also proposed to pay particular attention to the historical side of internal medicine. One can be assured that this journal will represent the highest class of medical scientific productions by representative members of the profession.

MEDICAL NOTES

OREGON

School Physical Examinations Upheld. A decision in the case of Mrs. Carrie H. Williams, who brought mandamus action against Portland school authorities in an effort to compel them to reinstate her daughter in school, was handed down by Circuit Judge McCulloch on Oct. 11. Mrs. Williams alleged that her daughter had been refused readmission to school in spite of the fact that her parents had filed written protest against her being submitted to medical inspection. A number of witnesses, who were opposed to school health examinations for religious or other reasons, testified for the plaintiff. They said that in certain instances school children have been illegally examined, their ailments wrongly diagnosed, and that they have been subjected to embarrassment during examinations. School health authorities denied these charges. Judge McCulloch ruled that public health officials have legal authority to require physical examinations for eligibility to school classes, but that when requested by parents, examination by any reputable licensed physician must be accepted in lieu of inspection by school physicians. The board also will retain the right of examining children for the purpose of disclosing evidence of contagious diseases.

Speaks on Contagious Diseases. Dr. John G. Abele, city health officer of Portland, addressed the Portland City and County Medical Society on the general subject of contagious disease in relation to public health. He advised the physicians in attendance to be constantly on the watch for epidemics in a quiet manner, but to avoid spreading false rumors to the public. He stated that doctors should be depended upon to correct mistaken reports about contagious epidemics, as the repeating of them does more harm than good.

Health Demonstration Head Resigns. Dr. Walter H. Brown, who for the past two years has occupied the position of director of the Marion County Child Health Demonstration at Salem, has resigned. He has accepted a position as professor in the department of hygiene and physical education at Leland Stanford University, Palo Alto, Calif. He will be succeeded by Dr. William De Klein, until recently director of the Child Health demonstration at Fargo, North Dakota.

Isolation Hospital Planned. Concrete plans for the erection of an isolation hospital at Klamath Falls were laid before the city council at a recent meeting. The plans call for the erection of an initial unit costing $9000. The city and the county will share the privileges of the new hospital and both will assume an equal burden in the cost of construction and maintenance.

Study Hospital Need at Bend. At a meeting of the Lion's Club on Sept. 23, a committee of physicians and laymen was named for the purpose of determining the need of an isolation hospital at Bend. The action followed recognition of the possibility of the spread of poliomyelitis from adjacent cities and the present lack of facilities to meet such a situation, should the disease assume epidemic proportions.

Mercy Hospital Changes Management. The Sisters of Mercy of the Roman Catholic Church of Eugene have announced the sale of the Mercy hospital to the Eugene Bible University which will continue its operation.

Veterans Hospital Soon to be Built. Bids for the construction of the $1,350,000 United States Veterans hospital at Portland will be opened during December. It is expected that construction of the new institution will begin next January. The hospital will be completed early in 1928.

Arrest Doctor in Drug Ring. Dr. R. C. Kelsey of Portland was arrested in October on the charge of violating the Harrison narcotics act. He is sixty-nine years old. It is alleged that for the past year he has been the chief supply "officer" of a group of drug peddlers. He has denied the charges against him.

Opens Private Hospital. Dr. Harry J. Anderson of Corvallis recently opened his new private hospital.

Club Honors Physician. Dr. Calvin S. White was elected president of the University Club of Portland at the recent annual election.

Dr. K. Burchardi, for several years a practicing physician at Klamath Falls, has disposed of his practice. He intends to locate in Southern California.

Dr. S. C. Brown of Silver Lake underwent an operation for appendicitis at the Albany hospital Oct. 13.

Dr. W. K. Ross, a 1922 graduate of the University of Oregon medical school, has become associated with Dr. C. S. Moore in his practice at LeGrand.

Dr. A. C. Schroeder of Tualatin sailed Sept. 29 for Germany. He plans to spend the next nine months in postgraduate study at Heidelburg.

WASHINGTON

Veterans' Hospital Filled. Dr. H. E. St. Antoine, medical officer in charge of the U. S. Veterans' hospital at American Lake, stated in a recent interview that the institution is now filled to capacity and there is a waiting list of approximately forty patients. The hospital was completed in 1924 at a cost of $1,300,000. It provides for the care of three hundred sixty patients. The personnel numbers two hundred thirty-five.

Yakima Has Hospital Shortage. At a meeting of Yakima Chamber of Commerce Oct. 14, Dr. A. J. Helton, chairman of the hospital committee, pointed out to the members the serious lack of adequate hospital facilities. He stated the city is in need of either a new $400,000 hospital or a one-hundred bed addition to the present St. Elizabeth hospital.

New Hospital Opened. The new hospital at Northport was opened in October. It can accommodate fifteen patients.

Port Health Problems Discussed. A special board of the United States Public Health Service held a conference at Seattle in October for the purpose of establishing new fumigation and quarantine regulations in Puget Sound ports. The board was appointed by Surgeon General H. S. Cumming of the United States Public Health Service and consisted of Surgeon L. D. Fricks, medical director of the Sixth District, and Senior Surgeon J. C. Perry and Surgeon R. H. Creel of San Francisco. They expressed themselves as being desirous of replacing the sulphur method of fumigating ships by the newer and more efficient cyanide process.

Studies Tuberculosis in Polynesia. Dr. J. J. Markey, diagnostician of the Washington Antituberculosis Association, recently returned to Washington after a summer spent in various regions of the South Sea Islands. He stated that he found the native Polynesians to be less susceptible to tuberculosis than are the American Indians.

Elected Board of Governors. Dr. E. Weldon Young and Dr. George W. Swift of Seattle were elected members of the board of governors of the American College of Surgeons at its recent annual meeting in Detroit, Mich.

Fined for Illegal Practice. Roger E. Payne of Monroe was found guilty, Oct. 6, of practicing medicine without a license. Mr. Charles F. Manning, of the department of licenses, testified that Payne had prescribed medicines and had even performed operations.

Snohomish County Medical Society at a meeting at Everett, Oct. 4, was addressed by Dr. Carl Stomberg, who discussed "Ethylene Anesthesia." A paper was also read by Dr. Albert B. Murphy on the subject of "X-ray Diagnosis of Sinuses." At the Oct. 18 meeting, the guest of honor was Dr. Alexander H. Peacock, Seattle urologist, who addressed the society on the subject of "Urological Diagnosis."

Klickitat-Skamania Counties Medical Society met at White Salmon Oct. 20. Drs. Ben Wade and Charles E. Sears of Portland, Ore., spoke respectively on the subjects of "The Acute Surgical Abdomen" and "Medical Emergencies."

Dr. L. R. Lightfoot, formerly a member of the Bridge Clinic at Tacoma, has taken over the practice of Dr. Frank Plum at Cosmopolis.

Dr. W. R. Luke, formerly of Brooklyn, New York, a graduate of Toronto University, has joined Drs. Carroll Smith and A. N. Codd in their practice at Spokane.

Dr. R. Y. Jeffrey, who has been engaged in practice with Dr. H. H. Adams at Roslyn, has moved to Issaquah. He will continue his association with Dr. Adams, the latter having recently opened an office at Renton.

Dr. Frank A. Plum of Cosmopolis, has gone to Philadelphia, where he will spend the next year in postgraduate study at the University of Pennsylvania.

IDAHO

Appointed Asylum Superintendent. Dr. George I. Williams, of Independence, Mo., has been selected from a field of seventeen candidates for the position of superintendent of the Idaho State Hospital for the Insane at Blackfoot. He is a graduate of the University of Kansas medical school, and has previously served as head of a psychopathic hospital in Missouri.

New State Consultant. Dr. F. W. Almond, who for the past four years has been state public health advisor, has been designated to fill temporarily the vacancy caused by the resignation of Dr. R. M. Fouch, state public health consultant.

Dr. O. F. Page of Sandpoint and Dr. W. S. Bardwell of Newport have purchased the interest of Dr. E. E. Getzlaff in the Priest River hospital. Dr. Getzlaff and family sailed in October for Tokyo, Japan, where he has been appointed to take charge of a Seventh Day Adventist mission hospital in that city.

Upper Snake River Valley Medical Association met at Rigby, Sept. 19. The general topic for discussion was the state quarantine law in relation to contagious diseases of childhood.

Dr. A. D. Rogers of Bancroft and his wife suffered an accident in their automobile, in which they were riding on Oct. 4. Their car was overturned, after being forced from the highway by another machine. Fortunately they escaped with minor injuries.

Dr. J. C. Wiik of Moscow has renewed his practice after a summer spent in Europe.

OBITUARIES

Dr. James H. Lyons, Seattle, Wash., a pioneer physician of the Northwest, died at his home Oct. 4, aged 68 years. He was born in Delphi, Ind., in 1859, and graduated from the Medical College of Ohio, Cincinnati, in 1887 and from the New York Post Graduate Medical School in 1892. He had been engaged in practice in Seattle since 1893. He was the first milk inspector in that city. From 1915 to 1916 he occupied the position of superintendent of the King County hospital. He was honored with the presidency of the Washington State Medical Association in 1906-07, and also served a term of office as president of the King County Medical Society in 1903-04. Dr. Lyons retired from active practice in 1920 and since that time had spent part of his time in foreign travel.

Dr. Frederick C. Parker, Seattle, Wash., died Oct. 5 in a Portland hospital following an operation. He was born in New York state in 1870, and graduated from the University of Illinois College of Medicine, Chicago, in 1910. He had practiced continuously in Seattle since 1911. He was active in the Washington National Guard and at the time of his death held the rank of captain in the medical department of the 161st Field Artillery.

Dr. Arthur Clarke Johnson, Spokane, Wash., was almost instantly killed in Detroit, Mich., Oct. 5, when he stepped from a street car into the path of a speeding automobile. He had been attending the annual convention of the American College of Surgeons. He was born in 1875, and graduated from Rush Medical College, Chicago, Ill., in 1901. Later he went abroad for postgraduate study. He located for practice at Spokane in 1909. He was a veteran of the World War, during which he saw active duty in France. At the time of his death he was president of the local board of directors of the Spokane Y. M. C. A.

REPORTS OF SOCIETY MEETINGS

IDAHO STATE MEDICAL ASSOCIATION

TRANSACTIONS OF THE HOUSE OF DELEGATES OF THE THIRTY-FIFTH ANNUAL MEETING OF THE IDAHO STATE MEDICAL ASSOCIATION, TWIN FALLS, IDA., AUGUST 29-31, 1927.

First Session

Aug 29, 9 a.m.

Meeting was called to order by the chairman.

The following committee on resolutions was appointed by the chairman: H. D. Spencer, A. Barclay, J. N. Alley, J. F. Coughlin, A. G. O. Kellogg.

There being no further business to come before the House, adjournment was taken to 1 P.M. August 30, 1927.

Second Session

Aug. 30, 1 p.m.

The following members were present: D. L. Alexander, J. N. Davis, A. Barclay, F. M. Sprague, A. G.

O. Kellogg, J. N. Alley, G. O. Proctor, H. D. Spencer, C. W. Pond, W. F. Passer, J. F. Schmershall, J. F. Coughlin, P. Nelson.

Election of Officers

President. President-elect Dr. D. L. Alexander, Twin Falls, was formally declared President for 1927.

President-elect. Dr. H. P. Ross was elected to this office.

Secretary. Dr. J. N. Davis, Kimberly, was reelected.

Councilman of North District. Dr. D. C. Cornwall was unanimously elected.

A. M. A. Delegate. Dr. G. R. Proctor, Nampa, was reelected. Dr. W. F. Posser, Twin Falls, was elected alternate.

Standing Committees

Scientific Work. Dr. C. R. Scott, Twin Falls; and A. M. Newton, Pocatello, were elected.

Public Health and Legislation. Drs. J. L. Stewart, Boise; H. D. Spencer, Idaho Falls; and J. N. Allen, Lewiston, were elected.

SECRETARY'S REPORT

This was presented in brief. It was voted that the report be accepted and referred to the Finance Committee for audit.

Meeting place for the annual meeting of 1928. It was voted to meet at Yellowstone National Park with the associations of Montana and Wyoming. Meeting place for 1929 was not decided.

Report of the Resolutions Committee

Resolution No. 1

WHEREAS, the present health code of Idaho, which was compiled in 1919 is obsolete in many respects, due to the very recent advances in medical knowledge: now, therefore, be it

RESOLVED, that the said health code be revised to conform to modern medical knowledge and needs and that this matter be referred to the legislative committee with power to act.

Moved by Dr. Sprague, second by Dr. Alley the adoption of the resolution. Carried by unanimous vote.

Resolution No. 2

WHEREAS, the present medical practice act of 1899 and amendment thereto are wholly inadequate to meet the present needs of the people of Idaho, now therefore, be it

RESOLVED, that we recommend the enactment of a Basic Science Law.

Moved by Dr. Nelson, second by Dr. Coughlin the adoption of resolution. Carried by unanimous vote.

Resolution No. 3

WHEREAS, many violations of the various license laws have been brought to our attention, we respectfully ask that the department of law enforcement place a full time inspector in the field to check up and prosecute said violators. We whole-heartedly pledge our suppport to the furtherance of this activity. The Secretary of the Association is hereby instructed to advise the department of law enforcement of the contents of this resolution.

Moved by Dr. Coughlin, second by Dr. Kellogg the adoption of resolution. Carried by unanimous vote.

Resolution No. 4

WHEREAS, the business affairs of the Idaho State Medical Association have assumed such proportions that the present corps of officers are unable to devote the time necessary to its business to the end that the purposes for which this association is organized may be properly carried out; now, therefore, be it

RESOLVED, that the Councillors of the Idaho State Medical Association be empowered, and they are hereby empowered and instructed to employ the services of any person or persons, to maintain whatever office they may deem necessary in order to assist them in carrying out their duties, and to carry out these instructions at the earliest possible date.

Meeting adjourned to 11:30 a.m., August 31, to hear the remainder of the report of the resolutions committee and for further business.

ADJOURNED MEETING

August 31, 11:30 a.m.

The following members were present at this meeting: J. N. Alley, H. D. Spencer, F. M. Sprague, P. Nelson, W. F. Passer, D. L. Alexander, G. O. A. Kellogg, J. N. Davis, A. Barclay, J. F. Coughlin.

Moved by Dr. Nelson, second by Dr. Kellogg the adoption of resolution No. 4. Carried by unanimous vote.

Resolution No. 5

WHEREAS, in our opinion a very pressing emergency exists for the purpose of raising and appropriating funds to enable the Councillors of the Idaho State Medical Association to carry on its business; now therefore, be it

RESOLVED, that the sum of $8000.00 be appropriated to conduct the business of the Association for each year, and that the members of the association be assessed annually the sum of $60.00 per capita, and said assessment shall be payable semiannually or by the payment of the sum of $50.00 in advance, providing said sum of $50.00 is paid prior to February 1st of each year. Be it further

RESOLVED, that in the event that sufficient assessments have not been paid to equal the amount necessary to carry on the business and pay the expenses of the association, a further assessment may be levied for the purpose of raising sufficient funds to do so.

We, the undersigned, members of the Finance Committee approved and recommend the adoption of the foregoing resolutions.

(Signed)
H. D. Spencer,
Geo. O. A. Kellogg,
J. N. Davis,
D. L. Alexander.

Moved by Dr. Kellogg, second by Dr. Sprague the adoption of resolution. Carried with one dissenting vote.

Resolution No. 6

BE IT RESOLVED, that the Idaho State Medical Association heartily endorses and hereby pledges its full support to the movement on the part of various lay bodies and organizations sponsoring the reclamation, care and treatment of crippled and deformed children, and which movement is deserving of the highest commendation.

Respectfully submitted.
H. D. Spencer,
Alexander Barclay,
Geo. O. A. Kellogg,
John N. Alley,
Committee.

Moved by Dr. Passer, second by Dr. Alley the adoption of resolution. Carried by unanimous vote.

Proposed Constitutional Amendments

Amendment Number 4

That Article XI, as amended by Amendment Number Two, be amended to read as follows:

"ARTICLE XI

Funds and Expenses

Funds shall be raised by an equal per capita assessment on each component society. The amount of the assessment shall be fixed by the House of Delegates, but shall not exceed the sum of Sixty Dollars ($60.00) per capita per annum except on a four-fifths vote of the Delegates present."

Amendment Number 5

That Article XIV of the constitution be amended to read as follows:

"ARTICLE XIV

Amendments

The House of Delegates may amend any article of this Constitution by a two-thirds vote of the Delegates at any Annual Session, provided that a copy of such proposed amendment shall have been forwarded to the Secretary of each component society at least fifteen days prior to the opening meeting of the annual session of the State Association, and that said proposed amendment shall have been read before the House of Delegates at least twenty-four hours prior to voting thereon."

Department of Public Welfare Letters

The following letters entered by the Department of Public Welfare were agreed upon to be read at this time before the House of Delegates:

Letter Number 1

August 29, 1927.

President and Secretary,
State Medical Association,
Twin Falls, Ida.

Gentlemen:

I take pleasure in submitting to you herewith a letter from Mrs. S. J. Ewen, Associate Director and Nurse in the Department of Child Hygiene.

I feel that the subjects contained in her letter are indeed very important and would appreciate having your Society, which is now in session, indicate its pleasure relative to these subjects by appointing a committee to confer with the Department of Public Welfare.

I might add that no treatment is given nor any remedial work done in the Child Health Conferences. If defects or pathologic conditions are found in the child examined, the parents are referred for correction to the family physician.

There is scarcely a conference held where the Director of the Bureau, or the Associate Director, is not asked questions relative to the removal of tonsils, the immunization for diphtheria, and at what time vegetables should be added to the diet of the infant, etc. In advising along these lines, and many others as well, we would be pleased to quote the State Medical Association on these questions.

Yours very truly,
Mr. David Burell,
Commissioner.

Letter Number 2.

August 29, 1927.

Mr. David Burell,
Commissioner of Public Welfare,
Boise, Idaho.

My Dear Mr. Burell:

The Bureau of Child Hygiene has been examining children of preschool age throughout the State for a period of five years. During that time, the physicians of Idaho have given us their valuable support and cooperation.

My experience in the Bureau during this period of time has led me to feel that if the work is continued in the state, and we wish to cooperate intelligently with the physicians of the state, a definite policy regarding examinations should be established.

There has been a difference of opinion among the physicians regarding the removal of tonsils; immunization for diphtheria; the age at which vegetables should be added to the diet of the infant; the use of iodized salt, cod liver oil, and many other kindred subjects.

May I suggest that this matter be taken up with the Medical Association and a request be made that the President appoint a committee with whom the Bureau of Child Hygiene may confer in the formulating of a policy for future work.

Respectfully Yours,
Mrs. S. J. Ewen,
Associate Director.

Moved by Dr. Alexander, second by Dr. Spencer, that a committee of three be appointed to confer with the Department of Public Welfare in the formulating of a policy for future work of the Bureau of Child Hygiene. Motion carried.

Memorandum From Dr. W. C. Woodward

A BUREAU OF LEGAL AND LEGISLATION OF THE AMERICAN MEDICAL ASSOCIATION UPON NEEDED SAFEGUARDS IN THE PROMULGATION OF REGULATIONS UNDER THE NATIONAL PROHIBITION ACT AND THE HARRISON NARCOTIC ACT.

The imposition of duties and prohibitions on the people through regulations promulgated by department heads, bureau chiefs and administrative boards acting under authority of Congress, and not directly by acts of Congress, seems to be a necessary outcome of the magnitude and complexity of our Government. There is no reason, however, why the formulation and promulgation of such regulations should not be as public as are the deliberations of Congress in the course of the enactment of a statute, nor why such regulations as are promulgated should not be published as widely and made as accessible as are such statutes as are enacted. In fact, publicity, publications and accessibility are essential to intelligent cooperation between the department head, bureau chief, or board promulgating a regulation and interested members of the community who must live under it, and are necessary to due execution and proper compliance.

Because of the absence of any statutory requirements as to the procedures to be followed with respect to these matters, the practices of various department heads, bureau chiefs and boards varies, as well as the practice of a single department head. It is desirable, therefore, that the entire situation be regulated by law, so as to promote uniformity and to hinder arbitrary and unwise action.

The same principles should doubtless apply to all regulations having the force and effect of law. Organized medicine, however, can hardly concern itself with such a broad field, but must properly limit its interests to the fields of particular interest to the medical profession, namely, the fields covered by the National Prohibition Act and the Harrison Narcotic Act.

With a view to the proper control of the promulgation of regulations under the acts named and under similar acts, the following principles are suggested for enactment into law:

1. Adequate public notice shall be given, and opportunity afforded interested parties to be heard, by brief or orally, before any regulation is promulgated;
2. Any regulation promulgated shall be officially published so as to inform the interested public of that fact;
3. A reasonable time shall be allowed after the promulgation of any regulation before it becomes effective;
4. Authentic copies of all regulations shall be available at all times to persons requesting them;
5. All regulations promulgated shall be officially reported to Congress annually and be published in authentic form in the Statutes at Large or in some other proper, generally available form;
6. When Congress first convenes after the enactment of the proposed law all regulation in force shall be officially reported to Congress and shall be published in authentic form in the Statutes at Large in some proper and convenient form, so as to bring publication up to date;
7. To meet emergencies, the President may waive the time limits and proceedings normally required for the promulgation of regulations, so as to permit the promulgation immediately of regulations necessary to meet the situation, such regulations to remain in force until regulations can be promulgated in due course.

I shall be glad to have any suggestions you are willing to offer with respect to this matter. If such legislation as is suggested above meets your approval, please let me know, so that the way can be better paved for its introduction when Congress convenes in December next.

Wm. C. Woodward,
Executive Secretary, Bureau of Legal Medicine and Legislation.
April 6, 1927.

Moved by Dr. Nelson, second by Dr. Alley, that we voice our approval of the above suggestions and urge their enactment into law. Carried by unanimous vote.

Former resolutions with reference to our cooperation with the Department of Public Welfare in making tuberculosis survey and the goiter survey were discussed and our continued support pledged.

The work of the Antituberculosis Association was discussed and our support pledged to any assistant they may procure to aid in the tuberculosis survey.

There being no further business to come before the House of Delegates, adjournment was taken until 1928.

Joseph N. Davis,
Secretary.

MEETING OF THE COUNCIL AT THE ANNUAL MEETING OF IDAHO STATE MEDICAL ASSOCIATION.

August 31, 1927, 4 p. m.

The purpose of the meeting was the organization of councilor district medical societies, auditing of the Secretary-Treasurer books and the consideration of resolution number 5, as presented to the House of Delegates at this Session.

The organization of councilor district societies: It shall be the effort of the state association during the year of 1928 to bring some form of graduate work to each councilor district. The subject of Periodic Health Examinations of the apparently well will probably be taken up this year. In order to further this work it is thought best to organize the councilor districts.

The auditing of the Secretary-Treasurer's books: The Secretary-Treasurer is hereby requested to have a registered accountant audit the books and the report mailed to the various councilors.

Consideration of resolution number 5 as presented to the House of Delegates at the 1927 annual session: Inasmuch as this resolution necessitates the appropriation of $8000 per annum for the carrying on the association's business, we the undersigned, members of the Finance Committee, do approve and recommend its adoption.

(Signed)
H. D. Spencer,
G. O. A. Kellogg,
J. N. Davis,
D. L. Alexander.

The above signatures constitute the number present. Adjourned.

J. N. Davis,
Secretary,

MINUTES OF THE MEETING OF THE THIRTY-FIFTH ANNUAL MEETING OF IDAHO STATE MEDICAL ASSOCIATION

MONDAY, AUG 29,
10:00 a. m.

Meeting called to order by the President, D. L. Alexander, the majority of those present being members of the House of Delegates. Meeting was adjourned to permit a session of the House of Delegates before noon.

1:00 p. m.

A short address of welcome by Mr. R. E. Bobier, Mayor of Twin Falls, followed the call to order by the President. Special Expert R. R. Parker, of the U. S. Public Health Service from the Tick Fever Laboratories of Hamilton, Montana, delivered the first address of the meeting on "Rocky Mountain Tick Fever."

"The Cripple in Idaho" was the subject of a paper by Dr. F. M. Sprague of Pocatello. It dealt with what is being done for the crippled children of Idaho, and the possibility of further service. Dr. Sprague also introduced the motion picture, "Give the Crippled Child His Birth Right," given at the Realto Theatre Monday night.

Dr. Joseph R. Numbers, of Boise, one of the pioneer physicians of the state, delivered an address on "The Importance of Rectal Examinations," and made on earnest plea for greater care in this work.

6:00 p. m.

The social dinner at the Rogerson Hotel for the doctors and their ladies was a highly entertaining event and preceeded the picture at the Rialto Theatre.

Monday, Tuesday and Wednesday, 8 to 10 a.m., Dr. W. C. Finnoff of Denver conducted a demonstration in the "Use of the Slit Lamp and Corneal Microscope," at Dr. Weatherbee's office.

TUESDAY, AUG 30

10:00 a.m.

"The Home Management of Diabetes," by Dr. C. F. Kemper. A very practical discussion of this every day problem.

Dr. I. H. Moore of Seattle, gave an excellent paper on "Fistula in Ano."

Dr. W. S. Keyting of Salt Lake City read a paper on "The Adaption of Physical Therapy to General Medicine."

Dr. Keyting also gave a clinic Tuesday morning at Dr. J. E. Langenwalter's office.

"History Taking," by Dr. Parley Nelson of Idaho Falls, emphasized the necessity of more care in taking of histories.

"Surgical Results in Peptic Ulcer," by Dr. J. Tate Mason of Seattle was an exhaustive and scholarly discussion on the subject, demonstrated by the use of lantern slides.

Dr. W. C. Finnoff of Denver delivered the next address on "The Management of Strabismus," containing an earnest plea for the care of these cases.

7:30 p.m.

The annual banquet was held at the Rogerson Hotel, with Dr. J. H. Moore of Seattle as master of ceremonies. The President's address was delivered before this meeting, also detailed discussion of the different phazes and problems of the Public Health League, delivered by Mr. Paul Davis, Drs. H. D. Spencer and Alexander Barclay.

WEDNESDAY, AUGUST 31,

9:00 a.m.

The first paper of the morning was by Dr. Parker on "Tick Fever Immunization." It was an up-to-the-minute discussion of this problem peculiar to the Pacific Northwest.

Dr. J. Tate Mason of Seattle gave a paper on "The Management of Exophthalmic Goitre."

"Our Inheritance and Responsibility in Medicine," was read by Dr. C. R. Scott of Twin Falls.

Dr. Joseph Aspray of Spokane gave an interesting discussion on "Electrocoagulation of Accessible Malignant and Nonmalignant New Growths."

2:00 p.m.

Dr. C. W. Pond of Pocatello read an interesting paper on "Tonsils."

"The Thymus in Childhood," was given by Dr. B. E. Bonar of Salt Lake City.

The report of the House of Delegates was read at this time which included the attached resolutions, numbers one to six, and proposed constitutional amendments, numbers four and five. This constitutes the legal reading of these amendments.

A vote of thanks is hereby extended to the Southside Medical Society for their part in helping make this a success.

J. N. Davis,
Secretary.

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., A. J. Wanamaker; Sec't'y., W. W. Bell

A general meeting of King County Medical Society was held in the auditorium of the Medical-Dental Bldg., Seattle, October 3. In the absence of the president, Vice-President A. O. Nelson presided. Minutes of the meeting of September 12 were read and approved.

Drs. I. B. Greene, E. G. Longley and Owen Taylor were elected to membership.

Report of the Hospital Survey Committee was presented by Dr. von Phul. He summarized the hospital situation in Seattle as determined by Dr. Broderick. The work of Rev. Dr. Mark A. Matthews, the chairman of the committee, was approved. Dr. Matthews deplored existing laws which render construction of a County-City hospital impossible. The solution seems to be the construction of a hospital by King County and the purchase by the city of sufficient space to care for emergency cases. Although Dr. Broderick suggested the University Campus as a location for the hospital, disposition of the matter will rest entirely with the County Commissioners.

Dr. S. L. Caldbick, of Everett, reported "A Cyst of the Mediastinum Removed Successfully Surgically." A female of twenty-two complained of dyspnea and pain in chest. Five years previously had pneumonia, following which tuberculosis was diagnosed. In the left chest was recognized a mass 10 cm. in diameter, from which 700 c.c. of mucoid fluid were removed. Incision was made over the mass, removing a portion of the sternum. After aspiration the cyst was removed and the cavity was packed with gauze. Although no hair, teeth or bone were found, the epithelial cells presented pointed to the diagnosis of dermoid cyst. A review of mediastinal tumors was given in connection with the report.

Dr. Homer Wheelon read a paper on "Blood Pressure Variations in Connection with Vasomotor Stimulation, Experimental Observations." Blood pressure variations are resultants of rearrangements among the various factors which normally enter into the production of pressure, incident upon alterations, first, in the resistance offered by variations in the size of the stream bed; and, second, because of variations in the rate and force of the heart beat. Alterations may be brought about by excitations of any portions of structures associating the vasomotor centers with the cardiovascular musculature. In addition are certain harmonic elements which act in such a manner as to supplement nervous activities. The basis for these statements lies in results obtained from experiments on anesthetized dogs, to whom nicotine was administered intravenously as a cardiovascular stimulant. Operative procedures consisted of vagotomies, decerebrations and functional adrenalectomies. In addition to abolition of the primary depressor phase by vagus paralysis, there is a reduction in the level of the maintained pressure and accentuation of the pressor responses to nicotine, both in animals whose normal cardiovascular response shows a primary depressor phase, and those in whom no such phase appears. These findings warrant the conclusions, first, that the vagus apparatus is intimately concerned in the activities of the cardiovascular apparatus following the use of nicotine; second, that nicotine acting on the vagus apparatus results in blood pressure changes because of the rate depressing action of the vagus on the heart; and, third, that the primary depressor phase in the pressure reaction following cardiovascular stimulation is the result of vagus function. It was found that nicotine excitation of the cardiovascular apparatus following functional adrenalectomy results in the appearance of pressure curves identical in appearance to those obtained by splanchnic stimulation following adrenalectomy. It may be concluded from experiments on adrenalectomized animals that the single pressor response to nicotine is due to central nervous stimulation and that this pressor response is the same as the primary pressor response of the normal reaction.

The Surgical Section of the society held a meeting Oct. 17, with Dr. H. T. Buckner in the chair. About one hundred were present.

Dr. D. V. Trueblood read a paper on "Some Observations on Injuries to the Neck." He described seven cases, three of which seemed suitable for operation and four for which little could be done. Case 1, a boy of 15, after pitching a ball with his head turned, received a pain in right side of neck and could not rotate the head. The radiogram showed a luxation of fifth cervical vertebra, which was reduced under anesthesia. Case 2 was one of monolateral luxation, similarly treated. Case 3, a boy of 5, held his head turned to the right since birth. Diagnosis of shortening of right sternocleidomastoid muscle, which was remedied by severing its double insertion and overcorrecting by a cast. Three other cases had negative x-ray findings, with limitation of head movements associated with severe pain. The necessity was stressed of obtaining true lateral pictures of the cervical vertebrae lest a fracture be overlooked.

In discussion, Dr. R. D. Forbes stated that fracture of the atlas should be diagnosed. Odontoid fracture can be demonstrated by the x-ray. There may be ligamental sprain with serious injury to soft parts difficult to differentiate from fracture. Extension by weight and pulley should first be used in these cases, followed by radiograph. Dr. C. F. Eikenbary recommended a bent iron frame bed on which extension to the neck may be maintained by traction on the head from a girdle about the hips. Dr. H. T. Buckner employs a jury-mast fastened to the head of the bed, which is elevated so that extension is maintained by weight of the body. Operative procedures in this region are very dangerous.

Dr. W. C. Speidel presented a paper on "Blood Transfusion, Indications and Technic." Definite effects from transfusion are restoration of circulating fluid, increase of oxygen carrying elements, increase of coagulability of blood and increase of natural protection against infection. Definite results from transfusion have been observed in pernicious anemia, purpura hemorrhagica, hemorrhage of the new-born, infections, surgical shock, preoperative treatment on debilitated. Professional donors are preferable to friends or relatives. The three syringe method, with the Lendenman needle, is to be preferred.

In discussion, Dr. W. C. Woodward stated that transfusion is not successful in secondary anemia and is only palliative in blood dyscrasias. In hemorrhage of the newborn as good results are secured with an ounce of the father's blood given subcutaneously. Dr. F. T. Maxson has seen a patient die from administering citrated blood. He spoke of the value of autotransfusion. Dr. A. T. Wanamaker emphasized the need of doing transfusions rapidly. Dr. Clein recommended intramuscular injections of blood for infections in children who are benefited by small quantities. These help malnutrition and premature cases. Dr. F. S. Horsfall advocated the citrate method because easier and hence is more frequently available than whole blood.

PIERCE COUNTY MEDICAL SOCIETY

Pres., E. C. Wheeler, Sec't'y., W. B. Penney

The regular meeting of Pierce County Medical Society was held in its rooms, Tacoma, October 11, President E. C. Wheeler in the chair. Minutes of the preceding meeting read and approved.

A paper, "Gastrointestinal Symptoms due to Urologic Conditions," was read by Dr. C. F. Engels. It was illustrated with several case reports and x-ray films. It was discussed by Drs. C. H. Doe, Clyde Magill and H. S. Argue.

Mr. Stevenson, Secretary of the Tacoma Chamber of Commerce, spoke of the work being carried on by the Chamber. He stated that there were eighty doctors in Tacoma who were not members, and made a plea for their cooperation in the Chamber's work. Drs. Wheeler and Crowe approved Mr. Stevenson's remarks. It was decided that the society would back up Mr. Stevenson's request and lend every effort possible to increasing membership among its members.

Dr. H. J. Judd, City Health Officer, spoke of the present status of the anterior poliomyelitis epidemic. He stated that there were forty-five cases up to date. He also asked that doctors report to the Health Officer cases of the present epidemic of streptococcus infection, complicated with pain in chest and abdomen. He stated that Dr. Simpson, of the State Board of Health, was making an investigation of these cases.

WHITMAN COUNTY MEDICAL SOCIETY

Pres., D. T. Ford; Sec't'y., J. E. Preucel

Whitman County Medical Society held its regular quarterly meeting on Monday evening, October 3, at Colfax. President D. T. Ford presided.

Part of the business meeting was given to the discussion of public health. The committee on public health, Drs. Preucel, Skaife, Layton and Mimzey, were instructed to continue its present activities of "Public Enlightenment on Medical Progress and Modern Preventive Medicine."

The radio talks from station KWSC, Pullman, by members of Whitman County Medical Society will be resumed on October 19, and on the first and third Wednesday of every month until the last part of May, 1928.

Dr. Mitchell Langworthy, president of Spokane County Medical Society, gave a very instructive talk on "Important Causes of Backache."

The next meeting will be held about the first week in December, the exact date to be announced later.

PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

Pres., H. V. Wurdeman; Sec't'y., M. J. Morris

The Puget Sound Academy of Ophthalmology and Oto-Laryngology met October 18, at the Virginia Mason Clinic, Seattle, with President Dr. H. V. Wurdeman presiding. Twenty-three members and four visitors were present.

A case of fibroma of the nasopharynx in a boy aged twelve was presented by Dr. Klemptner. A similar tumor had been removed from the same location a year before and this rapid recurrence and growth indicated malignancy, although the microscopic report was benign fibroma.

Dr. J. A. Weber presented a case of asthma of the mucopurulent tracheobronchitis type. These cases require removal of the mucopurulent material through a bronchoscope before other curative methods, such as desensitization, elimination of infectious foci, etc., can be effective.

Dr. Will Otto Bell gave a most interesting account of his trip and work in Europe during the past summer. He described the work being done in different cities of the continent. He was in exceptionally close contact with the leading ophthalmologists in Vienna, Paris and Budapest and brought a very interesting report. He entertained the Academy with a half hour of cinegraph pictures that he had taken on this trip.

Dr. L. L. McCoy read extracts from an unusually good article on the treatment of syphilis, especially in relation to eye conditions. He emphasized the fact that in the presence of active lesions the patient's tolerance should be built up by slower acting drugs, such as mercury and iodides before giving the arsphenamides. Cases of blindness, dermatitis exfoliativa, death, in this and neighboring cities were cited as results of neglecting this fact.

PUBLIC HEALTH LEAGUES

WASHINGTON

MEMBERSHIP GAINS REGISTERED

That the Public Health League of Washington has entrenched itself in the interest of the medical profession of the state is indicated by the result of the drive made in October for a larger membership. While the reports of the campaign launched by the Washington State Medical Association, with 100 captains in charge, are at this time incomplete, it is clear that the League has reached its highest membership in its history.

This is particularly gratifying to the officers who have the problem of preparing the budget for the next twelve months which must be arranged to cover expenses incident to a busy year. A few months later and another legislature will be in the making, and the necessity of electing health-minded men and women to the Olympia session will be stressed. Much has been accomplished in the past, but there are serious problems straight ahead. The sustained support of the organization from the health leadership of Washington, taken together with the augmented support now offered, will make possible the continued successful fight for elevated healing standards.

NOT THE NORTH POLE

At a recent meeting of the officers of the League an investigation was ordered covering the activities of Dr. Harry T. Cook of Los Angeles, who is not to be confused with the other Dr. Cook who admitted that he discovered the North Pole. This Dr. Cook has a special method of anesthesia for childbirth, reported to be spinal anesthesia with novocaine. His plan of action, it seems, is to establish a chain of hospitals in Washington, where his secret method may be used, these hospitals to be erected from the proceeds of a stock-selling campaign.

The stock exploitation phase of this medical salesmanship is being developed in Seattle, Mt. Vernon and other communities. It is said that in due course, if there are no setbacks, this scheme will be pressed in every part of Washington.

At the League meeting a resolution was passed, which is being sent to all chambers of commerce in the state, calling attention to this California plan and voicing opposition to the stock-selling methods being used and to the scientific utility of the project.

GORGAS MEMORIAL GIVES HELP

The publicity program of the Gorgas Memorial Institute has been useful in connection with League activities in Washington. A number of papers in the state have been using the releases of this organization and the response of the public as to the style and message of these health stories has been very favorable.

The officials of the Gorgas have kept the Public Health League on their mailing list to receive all health bulletins and newspaper realeases. This has been found useful and data from this source have been the basis for various publicity projects for the League. Some of the articles have gone into The Health Messenger and others have been used in pamphlets and bulletins distributed over the state. It is apparent that a state group can be helped greatly by the cooperation of a health organization of the purpose and power of the Gorgas Memorial, which has a nation-wide viewpoint.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

DIAGNOSIS AND TREATMENT OF DISEASES OF THE STOMACH, with an Introduction to Practical Gastro-Enterology. By Martin E. Rehfuss, M.D., Assistant Professor of Medicine at Jefferson Medical College. Octavo volume of 1236 pages with 519 illustrations, some in colors. Philadelphia and London: W. B. Saunders Company, 1927. Cloth, $12.00.

When we consider that but about ten per cent of gastric disorders are due to organic disease of the viscus, it is refreshing to find recognition of this fact in a wholly new treatise on diseases of the stomach. Rehfuss is to be congratulated because he so fully appreciates this fact that he has devoted, in Part III of his work, fourteen chapters to the condition of the stomach in diseases of various other organs. The only criticism that will immediately occur to the reader is whether a writer on the stomach is wholly justified in so encroaching on the domain of internal medicine as a whole. Lockwood, in 1913, was the first author of a textbook on diseases of the stomach who fully developed the general clinical significance of stomach disorders, and now Rehfuss follows suit with a much more elaborate consideration of the relations of the stomach to the diseases of other organs.

While the most recent researches are very thoroughly exploited, as in the chapter on the stomach and diseases of the liver, including descriptions of all the latest tests of liver function, yet no practical conclusion may be deduced from them as yet and the author does not attempt to make any. Another criticisim that the reviewer would make is especially noticeable in the chapter on the stomach and diseases of the gallbladder. This chapter is brimful and running over with technic for making a diagnosis of gallbladder disease and yet with all this great mass of undigested material there is no attempt at its assimilation and no summary is to be found of the really essential points for diagnosis. For instance, the indirect signs of gallbladder disease seen in ordinary fluoroscopic gastroenterologic study after a barium meal are enumerated as twenty, and yet of how much import are any of them in everyday diagnosis of cholecystitis? A considerable number of pages concernning the technic and results of examination of the duodenal contents after the Lyon-Melzer method as bearing on diagnosis of gallbladder disease are to be found, but of how much practical value, if any, are they?

Again, there are pages and pages devoted to cholecystography, some written by roentgenologists, in which the technic of giving the dye and taking the pictures are chiefly dwelt upon. After all this the author states, "The patient is prepared by a gentle purgative and enema," but adds, "some observers object to purgation." In the reviewer's considerable experience with cholecystography nothing is more apt to spoil the picture than gas caused by the use of cathartics.

We are very strongly impressed that, while the writer has gathered together all the latest information concerning his subject in Part III, he has failed to digest, coordinate and evaluate it. The general practitioner, after reading the whole chapter on the stomach and diseases of the liver, would be so bewildered by the intricacies of the various tests, and the lack of any definite deductions as to their practical application in diagnosis, that he would remain in his original state of ignorance. The fact is that, while we have many new tests of liver function, their practical clinical value has yet to be ascertained, as the reviewer has pointed out in his use of Rosenthal's dye test in some twenty-five cases of liver disease. It is too soon to incorporate all these newer methods of diagnosis in a textbook unless they are inserted in fine print or as foot notes, and with explanatory comments as to their real, practical everyday value. But the greater part of the book, devoted to the physiology and technic of gastrology and to the descriptions of the recognized gastric diseases, is admirable and conforms to the general estimation of them in their relations to other specific and general disorders. In other words, Rehfuss, as professor of medicine, takes the broad clinical outlook and realizes the secondary importance of many gastric disturbances.

Most of our works on gastroenterology have been written by the narrower specialists who have tried to transform symptoms into entities. The wide outlook in the discussion of gastroptosis and of achylia and hyperacidity shows the author's attitude as to the great variety of etiologic factors and their relations to other diseases. He is a firm believer in focal infections as perhaps the chief cause of gastric disease, and in sympathy with the prevalent opinion that diseases of the stomach, in respect to pathology and etiology, are comparable to diseases of other organs, as nephritis, myocarditis and hepatitis. He is also a strong adherent of a common cause for diseases of the stomach, pancreas, liver, colon and appendix and their frequent association, owing to their common embryologic, neurologic, vascular and lymphatic relationships. It is unfair to criticize the shortcomings, which after all are very few, in this new and very valuable contribution to gastrology without emphasizing the rare, unusually broad and modern conception of the relation of gastric disorders to other diseases. Taken as a whole it is an admirable treatise. WINSLOW.

GONOCOCCAL INFECTION IN THE MALE. By Abr. L. Wolbarst, M.D., Urologist and Director of Urologic Clinics, Beth Israel Hospital, etc. With a Chapter by J. E. R. McDonagh, F.R.C.S. With eighty-nine illustrations, including seven color plates. 239 pp. $5.50. C. V. Mosby Company, St. Louis, 1927.

The author states that it is his aim to record the advances in the management of gonorrhea in such a manner as to offer the practitioner, usually the first to be consulted by the gonorrheic, a working familiarity with the present day methods of diagnosis and treatment, based largely upon his personal experience. He more than accomplishes his purpose and has presented a concise, practical exposition of the subject which should be of value to the urologist as well as to the general practitioner.

One of the important features is the specific directions for diagnostic and therapeutic procedures which are not usually emphasized in current textbooks on urology. Although emphasis is placed on the careful use of the older methods of treatment, we find properly evaluated the importance of diathermy and the quartz light, protein therapy, intravenous therapy (mercurochrome, acriflavine, sodium iodide, etc.) and the newer antiseptics, such as reargon and neoreargon, lunosol, metaphen and Pregl's solution. There are excellent chapters on chronic seminal vesiculitis, the sexual neuroses and sterility following gonorrhea. Occasionally questionable statements are found, such as, "If a prostatic abscess points toward the rectum, it may be opened through that canal, care being taken to prevent infection from the bowel contents."

McDonagh's views in an appended chapter on gonorrhea are, to say the least, unique. This book is up to date and an excellent addition to the treatises on this subject. HEPLER.

HEALTH SUPERVISION AND MEDICAL INSPECTION OF SCHOOLS. By Thomas D. Wood, M.D., College Physician, Adviser in Health Education, and Professor of Physical Education, Teachers College, Columbia University, and Hugh G. Rowell, M.D., Physician to the Horace Mann Schools, Lecturer and Assistant Physician, Teachers College, Columbia University. Octavo of 637 pages, with 243 illustrations. Philadelphia and London; W. B. Saunders Company, 1927. Cloth, $7.50 net.

This book is intended to meet the need of a practical, comprehensive program of health supervision in schools. The physical and mental health of pupils is discussed, with the necessary methods to determine whether or not the child is healthy. Emphasis is placed on the procedures of the school in relation to pupils, homes, health authorities and the community to obtain the best results in the correction of health defects. The details of health examinations are presented at length, with many samples of blanks and charts to be used. Considerable space is devoted to school construction and sanitation, dealing with the questions of light, heating, ventilation, etc. Anyone interested in the question of school sanitation will find all aspects of the problem considered in this volume.

THE ANATOMY OF THE NERVOUS SYSTEM, from the standpoint of development and function. By Stephen W. Ransom, M.D., Ph.D., Professor of Neuroanatomy, Washington University, Medical School, St. Louis, Mo. Third Edition, Revised. Octavo volume of 425 pages with 284 illustrations, some of them in colors. Philadelphia and London: W. B. Saunders Company. 1927. Cloth, $6.50 net.

This volume is an excellent descriptive anatomy of the central nervous system. The chapters on embryology and microscopic anatomy are unusually complete. The separate chapters, dealing with the various divisions of the brain, cerebellum and spinal cord, are arranged in such a manner that for the student of neuroanatomy quick reference is facilitated. The chapter on the internal structures of the cerebral hemispheres, particularly the description of the ventricular system, is complete. All students of neuroanatomy and clinical neurology should find this text an invaluable one in the investigation of diseases of the central nervous system. SWIFT.

DEFECTIVE MEMORY, ABSENTMINDEDNESS AND THEIR TREATMENT. By Arnold Lorand, M.D., Carlsbad, Author of "Old Age Deferred," etc. 340 pp. $3.00. F. A. Davis Company, Philadelphia. 1926.

The author stresses the bearing of the glands of internal secretions on the subjects discussed in this volume. Memory may be improved by their increased activity or the removal of disturbances in their functioning. Thus hypothyroidism, leading toward cretinism, may be a factor in loss of memory, remedied by thyroid therapy. He has much to say on cerebral anemia as a cause of memory loss. The arteriosclerois of advancing years is a factor in producing this condition on account of decreasing cerebral blood supply. A case of amnesia is cited where the administration of amyl nitrite enabled the victim at once to remember his name and other factors of personal history. There are chapters on causes and treatment of forgetfulness, also on the treatment of ailments causing poor memory and the influence of the conscious and subconscious mind on memory.

FEEDING AND THE NUTRITIONAL DISORDERS IN INFANCY AND CHILDHOOD. By Julius H. Hess, M.D. Professor and Head of the Department of Pediatrics, University of Illinois College of Medicine, Chicago, etc. Fifth Revised and Enlarged Edition. Illustrated with 45 Engravings and one Full Page Color Plate, 566 pp. $4.50. F. A. Davis Co., Philadelphia. 1927.

The rapid progress of pediatrics requires frequent revision of text-books dealing with this subject. This is especially true of the texts on infant feeding. The chapters in this volume on acidified milk, vomiting, colic and flatulence, constipation and abnormal stools have been revised. as have also those dealing with rickets, sucrvy, spasmophilia, acidosis and anemia of infants. References to the recent literature and recent researches are also given. A new chapter dealing with celiac disease has been added. In this edition the author has brought this admirably complete work entirely up to date, so that it represents the last word in infant feeding and disorders of metabolism C. L. SMITH.

INFECTIOUS DISEASES AND ASEPTIC NURSING TECHNIQUE. A Handbook for Nurses. By Dennett L. Richardson, M.D., Superintendent of Providence City Hospital, Providence, R. I. Illustrated. 182 pp. W. B. Saunders Company, Philadelphia and London. 1927.

This volume presents salient facts about infectious diseases which a nurse should know. She should be taught explicitly as to the transmission of such diseases from one to another, and how they can be prevented, as she comes into closer contact with patients than do physicians. The opening chapter gives a summary of the knowledge of infection and immunity. The various infectious diseases are reviewed in order, the important facts regarding each being briefly summarized. The chapter on care of infectious diseases at home might well be perused by friends of the patient as well as the attending nurse. Part II considers aseptic technic, specifying many details which might easily be overlooked in routine instruction.

COMPENDIUM OF REGIONAL DIAGNOSIS IN AFFECTIONS OF THE BRAIN AND SPINAL CORD. A Concise Introduction to the Principles of Clinical Localization in Diseases and Injuries of the Central Nervous System. By Robert Bing, Professor in the University of Basle. Translated from the Sixth German Edition by F. G. Arnold, B.A., M.B., B.H. (Oxon). Third Edition, Revised and Enlarged. With 120 Illustrations, 204 pp. $6.00. C. V. Mosby Co., St. Louis, 1927.

This third edition shows a considerable improvement over former editions. Throughout this compendium the diagrams and illustrations are very interesting and instructive to the student of neurology, particularly those representing some of the higher cortical areas. There are many additions to this recent publication which are of clinical interest. The presentation of the subject matter as a whole is clear and arranged in a manner which will appeal to all students of clinical neurology. On the whole, this last edition will be found invaluable in the localization of lesions of the central nervous system.

DICKERSON.

CLINICAL CASE-TAKING. Supplement to Methods in Medicine. By George R. Herrmann, M.D., Ph.D., Assistant Professor of Medicine, Tulane University, New Orleans. 90 pp. $1.50. The C. V. Mosby Company, St. Louis. 1927.

This monograph is intended as a supplement to George Dock's "Methods in Medicine." The author states that good scientific mental habits are almost as easily acquired at the start as are careless, sluggish ones. Without the aid of a guide the medical student, intern or practitioner in his earlier years is not sufficiently equipped with knowledge of general medicine to develop the multitude of symptoms of which a patient complains. This volume offers a synoptic form of recognizing and recording symptoms which will aid one in establishing the desired routine habit. One wishing suggestions in this line of work will find this volume worth reading.

THE RELIGION CALLED BEHAVIORISM. By Dr. Louis Berman. Cloth, 153 pp. $1.75. Boni and Liveright, New York. 1927.

This little book, very cleverly and cynically written, is both an exposition and a repudiation of the newer trend of psychology, known as behaviorism. The founder of this cult is one John B. Watson, a westerner, who experimented on rats and offered as his thesis for a degree at the Chicago University a dissertation called "Animal Education." Thus began experimental animal psychology, as contrasted with experimental human psychology, and there developed a precise quantitative technic, a Journal of Animal Behavior, and the study termed "behaviorism."

This whole matter began as a revolt against the the older school of introspective psychology or the study of one's own mind by introspective methods, i.e., reporting the process in the mind of an observer as he thought he thought. A sort of mental lifting oneself up by one's own bootstraps. To really get at the basis of psychology one must experiment with a subject wholly under absolute control and what better than the white rat.

The behaviorists have abolished intelligence and substituted modifiability. When you learn you become modified and you learn by change of environment. It is all a matter of stimuli and reactions and requires no inherent cerebration. The mouth of a hungry dog will water when shown food. If a bell is rung at the same time, after a while the dog's mouth will water at the sound of the bell, in the absence of the food. Reaction to the sound of the bell has become associated with food. Any learning process, from the behaviorist's standpoint, may be analyzed into a series of similar substitute reactions. In the place of instinct we have the term drive. For instance, in the female, placed in a box with apparatus for measuring activity, there is found increased activity during estrus, due to the ovarian endocrine entering her blood. This is sex drive, and there are also hunger drives, fear drives, etc.

The ultimate outcome of the application of these experiments on rats to man is to banish mind. There is no such thing as mind, or being conscious. One only thinks he thinks, he is only talking to himself. The human being is but a puppet or marionette. Instead of being moved by wires, all his activities are but reactions to environment or chemicals. Thinking becomes but a network of sensations, arising out of the learned movements of the muscles, viscera, and especially of the voice-producing mechanisms which go on inaudibly. Consciousness or thinking then means only silent talking or certain movements of certain muscles.

Feeling and the finer emotions have also no place in this mechanistic theory of life. Irreligion is favored by behaviorism and is sympathetic to the age where doing is so far above thinking. The author remarks that, "Continually on the scent for bunk, urbanites and suburbanites, wise because instructed by radio, tabloid and press agent, pride themselves on being intellectually hardboiled when they are only somewhat parboiled." He shows the fallacies of the newer school of psychology in the unnaturalness of the environment in which the studies are conducted. In animals living under natural conditions there is never a single stimulus, but a whole group of stimuli, and to take any one away alters the whole life of the animal. In studying life we first kill it and then put tissue through all sorts of treatment with stains and chemicals before examining it. So with studying the mind. We distort its natural environment and reactions so that the inferences drawn from such study are unreliable and misleading. The author points out the bearing of behaviorist thought to present day irreligion and even suicide. The book is well

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A BOOK OF ACHIEVEMENT

A recent mail brought us a copy of an unusual booklet which, although it is intended for advertising, would hardly be recognized as such, so dignified is it in typography and general appearance.

"For the Conservation of Life" is the title of this booklet, which wil be recognized by many as the slogan of a well known manufacturer of biological and pharmaceutical products, and, after reading the booklet, one is impressed with the fact that this slogan is a serious reality with this firm, and not merely a high-sounding phrase.

The booklet records some of the more important activities which have been carried on by the Mulford Laboratories with the aim and purpose of adding years to the average span of human life.

The achievements recorded therein are notable—some are epoch-making—and the reader is soon impressed with the vast amount of pioneering that these laboratories have done.

We heartily commend this booklet to your attention, and if you have not received a copy we suggest that you write to H. K. Mulford Company, Philadelphia, Pa., and mention this journal.

THE ANTITOXIN IN THE SERUM

We speak of antitoxic serums, or antiserums, as the equivalent of antitoxin; but the serum simply contains the antitoxin, and along with it certain other ingredients that it has been the object of biologic research for the past thirty years to get rid of. These are, so far as known, albumins and euglobulins. The former have been separated, to a large extent, from the antiserums, but the antitoxic principle is very closely linked with a globulin or a pseudoglobulin so that separation of these has been found extremely difficult.

The albumins and euglobulins are believed to be responsible for the serum sickness and serum sensitiveness that sometimes follow the use of antiserums.

An absolutely pure antitoxin has yet to be developed, but the analytic work of the pioneers in biologic therapy has at last succeeded in simplifying the problem to a certain extent. The Diphtheria Antitoxin now being offered by Parks, Davis & Co. is the most concentrated and the freest from all objectionable features of any heretofore supplied by this house. It is almost water-white in its purity, and contains a minimum, perhaps the irreducible minimum, of albumins and euglobulins.

worth while if only to broaden our views of current thought and to confirm us in the necessity of religion as well as of science. WINSLOW.

GETTING WELL AND STAYING WELL. A book for Tuberculous Patients, Public Health Nurses and Doctors. By John Potts, M.D., Fort Worth, Texas. Introduction by J. B. McKnight, M.D., Superintendent and Medical Director, Texas State Tuberculosis Sanatorium. 233 pp. $2.00. The C. V. Mosby Company, St. Louis. 1927.

The purpose of this book is to aid tuberculous patients, nurses and doctors in learning where their personal responsibility begins and where it ends. It is written primarily for lay readers, so the technical details are suggested and presented in a manner comprehensible for the general reader. Much space is wisely devoted to early symptoms and reasons for suspecting tuberculosis. A patient with suspicious symptoms is advised to consult his physician at once. Special stress is laid on the early symptoms, as loss of weight, weakness, a cough, etc. Due emphasis is placed on the necessity of staying well and suggestions toward this end are clearly presented. The necessity of educating the public on recognition of early tuberculous symptoms is emphasized. This is a very sensible volume which should be read by laymen as well as physicians.

THE HUMAN BODY IN PICTURES. A Visual Text of Anatomy, Physiology and Embryology. By Jacob Sarnoff, M.D., Associate Surgeon in Isreal-Zion Hospital. With 190 original illustrations. 120 pp. $2.50. Physicians and Surgeons Book Co. Brooklyn, N. Y.

This volume contains the text to be used in connection with a series of moving pictures intended to teach anatomy and physiology. It is especially adapted for schools, colleges and physical education, to provide for the lay mind a clear understanding of the essential structures and functions of the human body. Those interested in the teaching of anatomy will find this book, in connection with the moving pictures, a useful adjunct in their work.

CITY HEALTH ADMINISTRATION. By Carl E. McCombs, M.D., National Institute of Public Administration and New York Bureau of Municipal Research. 524 pp. The Macmillan Company, New York. 1927.

The substance of this volume is drawn largely from reports of the service of municipal health work made by the New York Bureau during the past fourteen years. Part I deals with municipal health functions, in which are discussed municipal health activities, the place of municipal health service in the field of public welfare and the administrative relations of the preventive and curative functions. Part II considers the organization and administration of sickness preventive functions. Boards of health, the public health laboratory and other similar topics are considered at length. In Part III treatment functions are presented. Here the whole subject of hospital management, its organization and functions are discussed, as well as its relation to community health education. Medical and nursing service of the hospital and their management are considered in their various aspects. This is a volume of value to those interested in all phases of municipal relations to the health of the community and the public care of sickness.

THE MEDICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month.) Volume XI, Number 11. (St. Louis Number, September, 1927.) Octavo of 322 pages with 48 Illustrations. Per Clinic Year, July, 1927, to May, 1928. Paper, $12.00; Cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company, 1927.

This volume is replete with many interesting and instructive reports, a few of which are as follows: Smith and Liggett discuss essential arterial hypertension, noting that many such cases may be relieved by removing the cause of the condition. Under infantile defectiveness Engelbach presents numerous conditions of infancy and childhood, indicating mental defects which parents are prone to overlook, and which might easily be removed by appropriate treatment. Barnes offers an interesting consideration of epileptic mental disorders which is well worth perusal. Associated cardiac states in hyperthyroidism by McMahon calls attention to conditions with which everyone should be familiar who treats thyroid disorders. There are so many good things in this book that they can be appreciated only by personal inspection.

MANUAL OF DISEASES OF THE EYE. For Students and General Practitioners. By Charles H. May, M.D., Director and Visiting Surgeon Eye Service, Bellevue Hospital, New York, 1916-1926, etc. Twelfth Edition, Revised. With 374 original illustrations, including 23 plates, with 73 colored figures. 445 pp. $4.00. Wm. Wood and Company, New York, 1927.

There must be a demand for a book which reaches its twelfth edition. This has been regularly published every two or three years since the first edition. It is not intended as a technical work for ophthalmologists. The author states it has always been his purpose to prepare the book for the use of students and general practitioners. There is a brief description of all the common diseases of the eye which might be encountered over many years of practice. There are many illustrations, including lifelike reproductions in colors. Treatment is confined to a brief description of operative and medicinal procedures which are most effective. The book successfully carries out its announced purpose.

POTASSIUM AND TARTRATES. A Review of the literature and the physical effects. By Ralph W. Webster, Ph.D., M.D., Professor of Medical Jurisprudence in the University of Chicago. 116 pp. The Commonwealth Press, Chicago. 1927.

There has been considerable discussion of late regarding the therapeutic effects from the administration of potassium and the tartrates. The writer has assembled in this book reviews of publication on the subject from all parts of the world. Part 1 is devoted to potassium, Part 2 to tartrates. In each part the literature is abstracted, dealing with the physiologic and toxic effects of each drug, its effects on the different organs of the body and their applications in practice.

NORTHWEST MEDICINE

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ORIGINAL CONTRIBUTIONS

CHOKED DISC IN INTRACRANIAL LESIONS

THE MECHANICAL FACTOR IN ITS CAUSATION*

George W. Swift, M.D.
SEATTLE, WASH.

In a review of the literature Parsons[1] outlines the history of the pathogenesis of papilledema of the optic nerve as follows: Turk in 1853 was the first to draw attention to the ophthalmic findings in brain tumor, chiefly retinal hemorrhages; in 1860 von Graefe described choked disc in its relationship to intracranial diseases. His conception was that a tumor mass caused pressure directly or indirectly upon the cavernous sinus, thus producing congestion of the ophthalmic vein and central vein of the retina, leading to edema of the papilla and hemorrhages. Following von Graefe, Sesemann and Judeich questioned the theory of pressure on the cavernous sinus, owing to its anatomic structure.

The next theory advanced was that of Schmidt-Rimpler, who proposed another mechanical theory, based upon Schwalbe's demonstration of the continuity of the subarachnoid space with the vaginal space of the optic nerve. He attributed the edema as caused by increased intracranial pressure impeding the flow of lymph from the eye so that fluid is pressed out of the distended vaginal space into the lamina cribrosa. Manz and Deyl elaborated on this theory, also Parinaud and Ulrich. Their theories were not fundamentally different from that of Schmidt-Rimpler.

In 1881 Leber advanced the inflammatory theory of choked disc and was followed by other opthalmologists who held to both the mechanical and inflammatory or a combination of the two theories. Hughlings Jackson was the first, followed by Benedickt, to attribute papilledema to a vasomotor disturbance. Chemical reaction, due to metabolic products, was advanced by Kruckmann and others. Experimental work was done by Manz, Parinaud, von Schulten, Deutschmann and others in an attempt to produce choked disc by means of increasing the intracranial pressure. Merz produced edema with blurring of the edges in from eight to twelve hours; others failed to corroborate his experiments, however.

From 1890 on until 1898, when Loeb published his experiments on the ligature of a frog's leg with a subsequent edema due to an acidosis, both the mechanical and inflammatory theories were advocated by various writers as the cause of papilledema. After Loeb's work in 1898 and the work of Cannon in 1901 the factor of acidosis became quite important in all theories and discussions regarding choked disc. To quote Parson's concluding paragraph:

> "In those animals in which the ocular blood supply is mainly of cerebral origin, one may expect high intracranial pressure to be accompanied by slowing

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* Read before the Annual Meeting of Pacific Coast Oto-Ophthalmological Society, Spokane, June 6-7, 1927.

> of the orbital and intraocular blood flow, with resultant malnutrition. Why the edema of the optic nerve should manifest itself almost entirely at the intraocular end must be due to local causes, and these are not far to seek. A very slight edema of the nerve at the lamina cribrosa will compress the capillaries, lead to greater anemia and greater edema, until finally the larger vessels are also compressed. The fact that papilledema is at first a pure edema is in favor of this view. It is only later, when the products of disintegration have accumulated and act as a chemical stimulus, that infiltration with leucocytes occurs. It would be unwise to press the hypothesis too far, but it may be of value in guiding future researches."

Our present conception of the etiology of choked disc began with the exhaustive researches of Leonard Hill on the cerebral circulation. We must first consider the anatomic conditions underlying the cerebral circulation in the damming-up, the difference between the intracranial circulation and the intraocular circulation as regards expansion of the enclosing membranes, and the effect of arterial tension upon these two structures. Second, we must consider the venous circulation and the effect of increased intracranial pressure upon the venous sinuses within the cranium and the indirect effect of venous stagnation in the sinuses upon the cerebrospinal fluid circulation. *The three factors that probably play the most important part are, then, arterial circulation, both intracranial and intraocular, the venous circulation, particularly intracranial and to a lesser degree the cerebrospinal fluid circulation.*

There can be no question but that anemia brought about mechanically to any part of the brain causes a chemical reaction, variously termed acidosis, reaction to metabolic changes, or under some other heading. Experimental work has been very difficult because of the fact that animals of lower order, such as rabbits, dogs and cats, which are commonly used in experimentation, have a return supply of blood from the eye through the extracranial route, whereas in the human practically all of the blood from the eye is returned to the venous circulation through the intracranial route.[2] Davis,[3] in 1925, was able to produce choked disc in the eyes of a dog by embedding in various parts of the brain agar-agar in a gelatine capsule. He makes no mention of ligating the extracranial veins, carrying the blood from the eyes of his dogs. He was able to produce choked disc at will and to relieve it by means of the classical subtemporal decompression. Cushing[4] has contributed largely to our knowledge of the circulation of the fluids in the subarachnoid spaces and the production of papilledema experimentally.

At the present time, to quote Hill[5]:

> "Our present knowledge of the cerebrospinal fluid spaces and their contents, coupled with clinical experience, points convincingly to the conclusion that choked disc is a mechanical effect of increased intracranial pressure. Beyond this general statement we can hardly go without speculating in regard to much disputed questions. For example, the importance of a dilated vaginal sheath of the optic nerves, whether this be a late or an early development in papilledema; the relative importance of pressure of fluid in the perivascular spaces about the central retinal vessels in the nerve and of pressure surrounding the nerve; the possible elaboration of chemical substances which damage the retinal tissue and blood vessel walls in the course of tumor growth, or of hydrocephalus without tumor; the exact locations at which a block of the cerebrospinal fluid channels will produce the highest degree of stasis transmitted to the optic discs; the explanation of the subsidence of papilledema when the excess of intracranial pressure has not been relieved. These and other questions deserve study, but are outside the domain of clinical ophthalmology."

My interest in the etiology of choked disc began about 1912, when I had occasion to observe a gradually developing choked disc in a person suffering from a tumor of the parietal lobe. This patient was subsequently operated on by a general surgeon with the classical decompression operation. The choking subsided for a time and then returned and was followed by complete secondary optic nerve atrophy. A large hernia cerebri developed in this case, almost as large as the man's head. He lived for two years following the decompression operation. Subsequent observations were made on a number of clinical cases, each with different symptoms. Repeated searches through the literature for theories which would explain the various phenomena failed to reveal a satisfactory explanation in these cases. For instance, all neurosurgeons have had occasion to observe large tumors in the frontal lobe with a very late production of choked disc, whereas small tumors in the temperosphenoidal or cerebellar region would produce enormous choking.

Traumatic surgery has taught us much regarding the acute development of choked disc and can furnish convincing proof that the mechanical factors alone can produce it. For instance, a patient,[6] referred from Alaska, whose head had been caught between two ore cars causing a fracture of the base, involving the sella and in which a double arteriovenous aneurism developed with resulting choked discs. It came on almost immediately, as the doctor in Alaska reported, and the patient presented a typical picture of a cavernous sinus thrombosis. Here we have a simple mechanical production of choked disc. All of us have seen similar conditions develop in a thrombosis of the cavernous sinus or in aneurisms as described above. Ligation of the internal carotid in this instance relieved the bruit on one side and the choking subsided. One would have expected, with the increased work put upon the opposite internal carotid, that the aneurism on that side would increase and yet it apparently remained static.

In another case, seen in consultation with Dr. E. O. Jones, in which, following a skull fracture due to an automobile accident, there developed a choked disc and arteriovenous aneurism of the right side, a glaucoma developed in the eye. Subsequently the carotid was ligated on that side and the glaucoma subsided as well as the aneurism. This would tend to corroborate the theory of Parker,[7] that there is an increased intraocular pressure in all the cases of increased intracranial pressure. This has not been observed in other cases, nor have we felt justified in using a tonometer in cases where choked disc is plainly evident.

Ft. Riley, during the influenza epidemic, offered an opportunity[8] to observe many cases of acute pneumonia with slight delirium of a one or two days duration. The autopsies in these cases revealed a marked stagnation of blood in the intracranial sinuses. The cavernous sinus sometimes would stand out in marked contrast to the adjacent dura on the floor of the middle fossa. The lateral ventricles were also markedly dilated. The capillaries on the surface of the brain would show the same intense dilatation as on the surface of the optic thalami. It appeared that here we had a typical damming-up of the venous return, such as one would get when injecting a foreign substance under the dura. An observation was made at that time that perhaps the engorgement of the ventricles was due to a failure on the part of the longitudinal and transverse sinuses to carry away the cerebrospinal fluid as quickly as it was formed.

While still believing that the cerebrospinal fluid played an important part in the production of choked disc, observation was made on a series of cases of acute pneumonia and in each instance the eye grounds showed a beginning papilledema. The changes varied from a filling of the physiologic cup to the typical upper and lower blurring of the disc margin and finally to a true papilledema. In those cases that we were permitted to observe over a longer period of time, with the recedence of the delirium came a recedence of the edema of the retina. In this series of cases we had to deal with an acute inflammatory condition which brought about a stagnation of blood within the cranium. A generalized edema followed, and in each instance an increased intracranial pressure.

I then became a convert to the purely mechanical theory of choked disc. Subsequent work in the field of brain surgery, with observation of a number of cases, has convinced me that it is the greatest factor with which we have to deal, and that this mechanical factor may often be brought about by the presence of a foreign material, such as a tumor, which may cause, first, a local edema of the brain with later a general edema of the brain, which in turn, acting mechanically on the venous sinuses, causes the damming-up of the fluid.

A series of illustrations will show how a lesion may be so situated as to produce a unilateral choking, a bilateral choking, early or late choking, as the case might be. We have used in these cuts the diagram found in "Anatomy of the Brain and Spinal Cord" by Whitaker and have placed the lesion in different parts so as to illustrate the point.

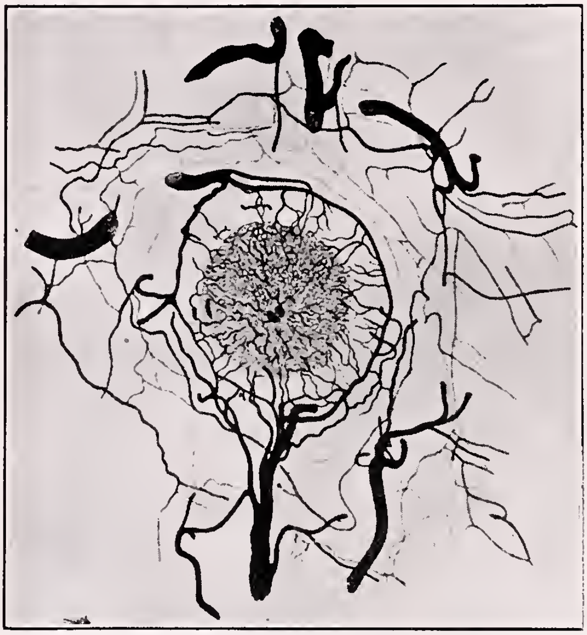
Fig. 1. Showing anastomosis of vessels of disc and choroid (from Parsons after Leber).

Fig. 1 illustrates the anastomosis between the vessels of the choroid and optic nerve after Leber (p. 950, fig. 676). It shows how the slightest amount of pressure can cause a damming-up of circulation not only of the vessels of the nerve itself, but of the choroid as well.

Fig. 2 illustrates a lesion in the right cavernous sinus, such a lesion as, for instance, an aneurism due to skull injury or a cavernous sinus thrombosis due to infection, both of which produce a unilateral

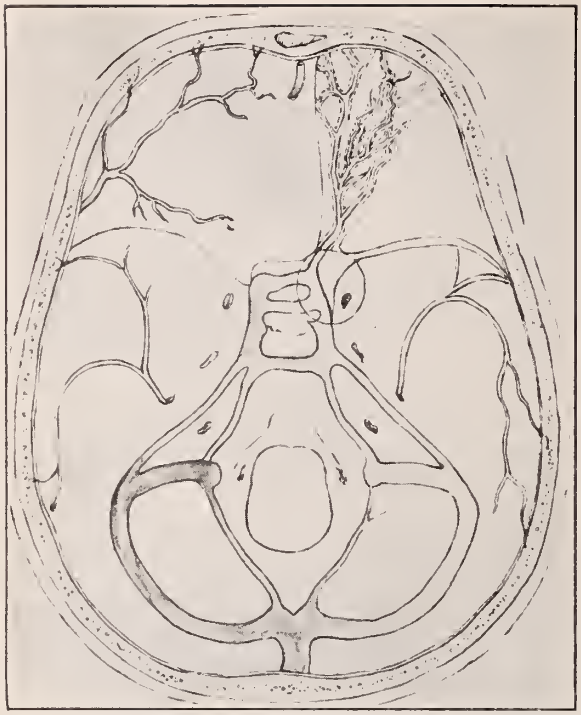

Fig. 2. Lesion of cavernous sinus, causing sudden and early choked disc (outline from Whitaker's Anatomy of Brain and Spinal Cord).

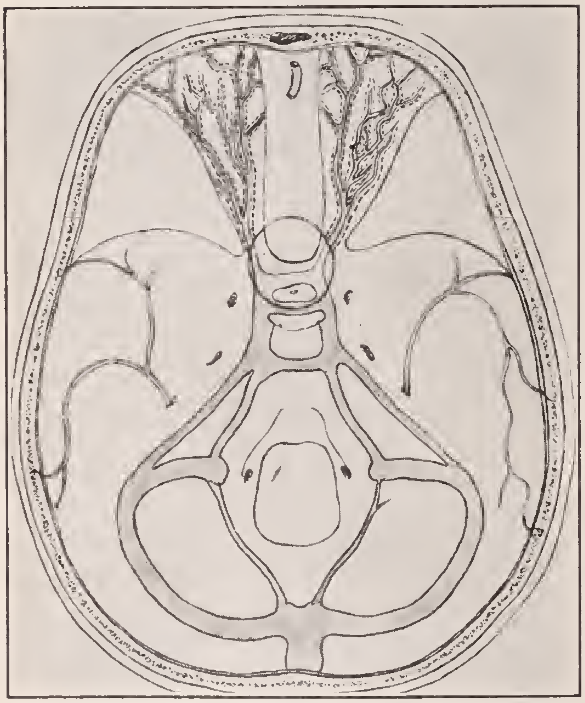

Fig. 3. Lesion of pituitary gland or aneurism of circle of Willis. Choking a terminal sign.

choked disc very early. The case cited of Dr. Jones and many other similar instances could be used to illustrate this point.

Why does not a lesion of the optic nerve such as, for instance, a neuroma of the sheath produce a

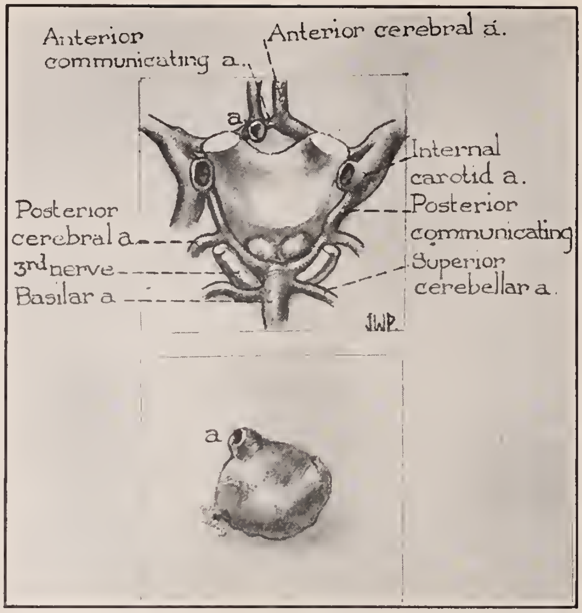

Fig. 4. Aneurism showing marked distention and flattening of optic chiasm. Same as fig. 5.

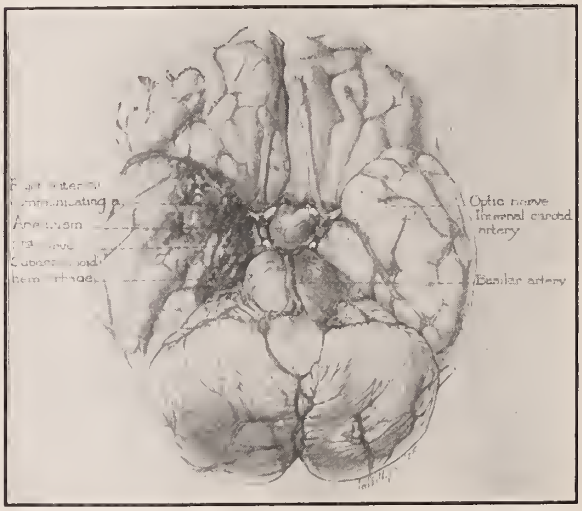

Fig. 4a. Aneurism of circle of Willis with no choking until after large hemorrhage into cerebral hemisphere of right side.

choked disc rather than optic atrophy? First of all, as the tumor grows in the orbit the bony wall gives away or the eyeball bulges forward and, while the veins are stretched, they return through the sphenopalatine fissure and there is not a direct pressure on the cavernous sinus or the veins themselves.

Fig. 3 shows a lesion in the midline which might cause a double choking. Such a lesion occurred in the first case reported, that of a double aneurism of the cavernous sinus. A large tumor of the pituitary, or an aneurism of the circle of Willis, pressing lateralward against the chiasm, would account for local pressure at this point, which may cause a double choked disc.

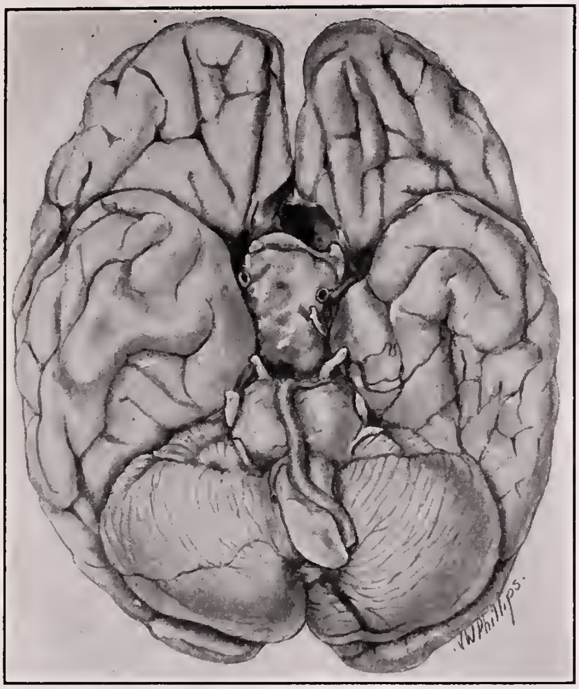

Fig. 5. Aneurism of circle of Willis, eroding into sphenoid sinus. Choked disc on right side late in the course of the illness.

Two aneurisms, the one small, the size of a large hickory nut, situated immediately over the optic chiasm and pressing against the chiasm, as shown in the drawing (figs. 4 and 4a), so that it was flattened and thinned in the center, did not cause a choked disc. The second (fig. 5), an aneurism which had erroded the bone in the body of the sphenoid sinus did not cause choked disc until just before death. At that time the symptoms developed of a third nerve paralysis, fifth nerve initial irritation, later paralysis and finally a sixth nerve paralysis. It was upon this progressing chain of symptoms that the diagnosis was made just prior to death.

In fig. 6 a lesion, involving the angle of the cerebellum, pons and medulla, again causes, first, a unilateral choked disc and later a bilateral choked disc. Fig. 7 is similar to fig. 6 and shows what occurs in a thrombosis of the transverse sinus in mastoid disease. In fact, in these cases a choking always develops first on the side of the lesion. Wanamaker has reported a series of cases of this character and others have made similar observations. The Queckenstedt test probably is more accurate than the eye examination and we have used it for several years to determine the presence or absence of a transverse sinus thrombosis.

Fig. 8 shows the typical mechanism of a tumor situated in the posterior fossa. A cerebellar cyst, abscess or tumor at the angle produces a double choked disc. This is brought about by pressure against the transverse sinuses as well as directly damming-up the blood from the petrosals. The venous return from the superior longitudinal sinus as it reaches the torcular divides and leaves the posterior fossa through the two transverse sinuses. Just as it enters the floor both sinuses receive the blood from the inferior petrosals, which carry the bulk of the blood from the cavernous sinuses.

The first effect, then, of a tumor in the posterior fossa is to dam up the blood from the petrosals, which in itself will cause a choked disc rather early and, if the tumor is situated on one side, usually the choking begins in the eye of the same side. The second change is that of lateral pressure against the walls of the transverse sinuses. This dams up the blood from the superior longitudinal sinus, which in turn causes a stagnation of the cerebrospinal fluid over the cortex of the brain. It likewise obstructs the aqueduct of Sylvius, so

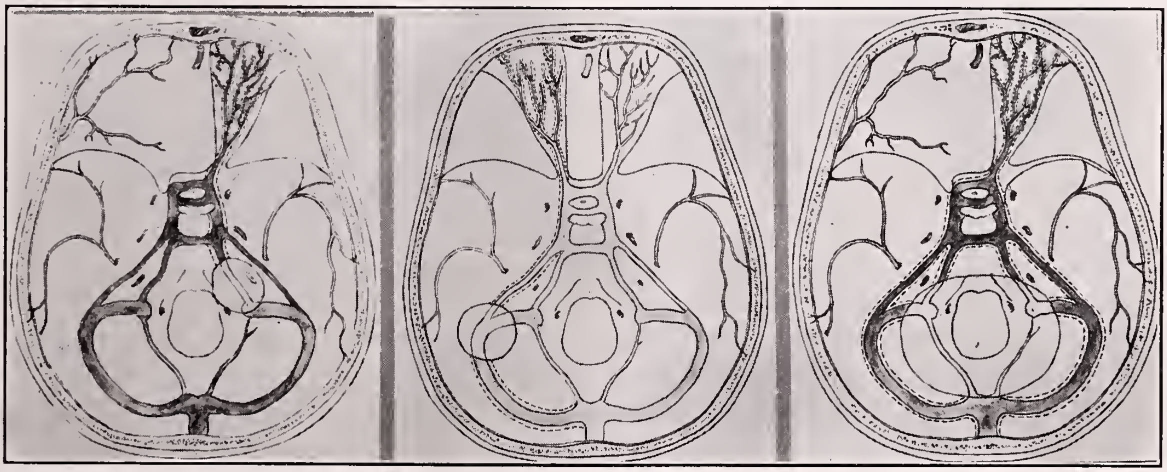

Fig. 6. Cerebellopontile angle lesion. Fig. 7. Lateral sinus thrombosis. Fig. 8. Lesion in cerebellum.

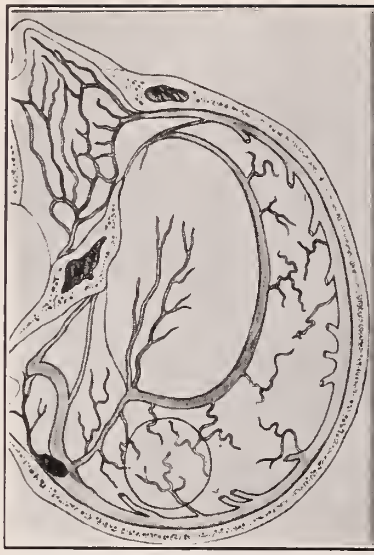

Fig. 9. Lesion of occipital area.

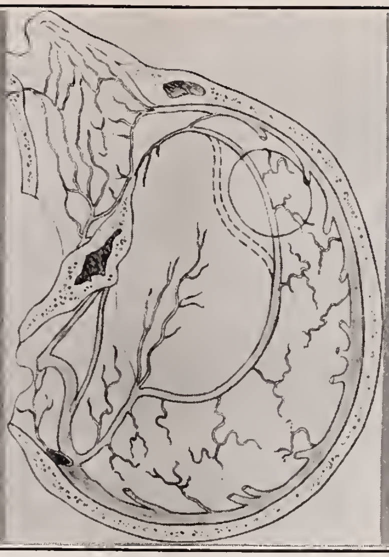

Fig. 10. Lesion of frontal area.

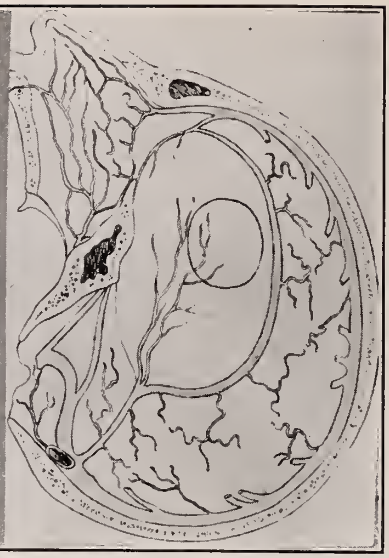

Fig. 11. Lesion situated in central nuclei area.

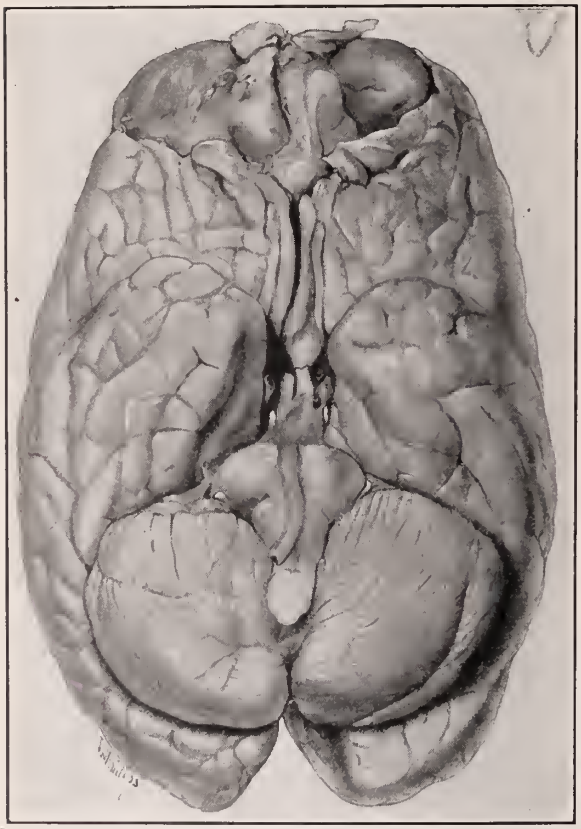

Fig. 12. A large frontal lobe tumor with choked discs as a terminal sign. (Metastatic sarcoma.)

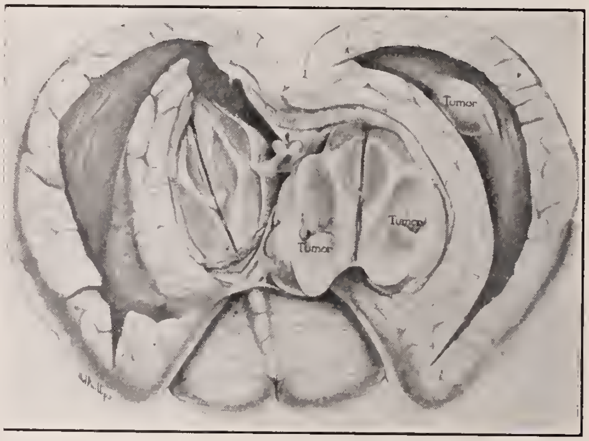

Fig. 13. A tumor (glioma) of the optic thalamus with no neurologic findings or choked disc. Patient died of sudden hemorrhage.

that in addition to the choking we have a uniform distension of the lateral ventricles.

The intracranial pressure in these posterior fossa cases is always much higher than in tumors situated elsewhere, and likewise in decompression operations in these cases one is impressed by the copious flow of cerebrospinal fluid under intense pressure which results immediately after puncture of the dura. These mechanical factors thus explain the two results, namely, choked disc and increase of cerebrospinal fluid pressure.

In the three subsequent figs., 9, 10 and 11, the location of the tumor is seen to be where it is almost impossible to cause a damming-up of the petrosal sinuses until such a time as the general increase of intracranial pressure causes a damming-up of the venous sinuses, and thus one can readily see why a large tumor of the occipital lobe will show practically no choking of the disc until the terminal stage. A frontal lobe tumor (fig. 12) may also reach an enormous size before choking occurs.

In fig. 10 the tumor is situated either in the optic thalami, the corpus callosum or in the third

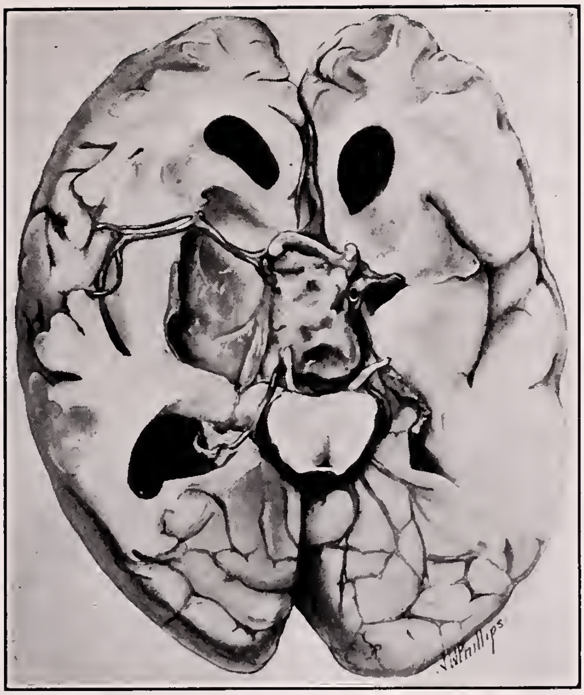

Fig. 14. Duration two years after first symptoms of a cystic adenoma of the pituitary with extension into the left temporal lobe with no choking until the last week of life.

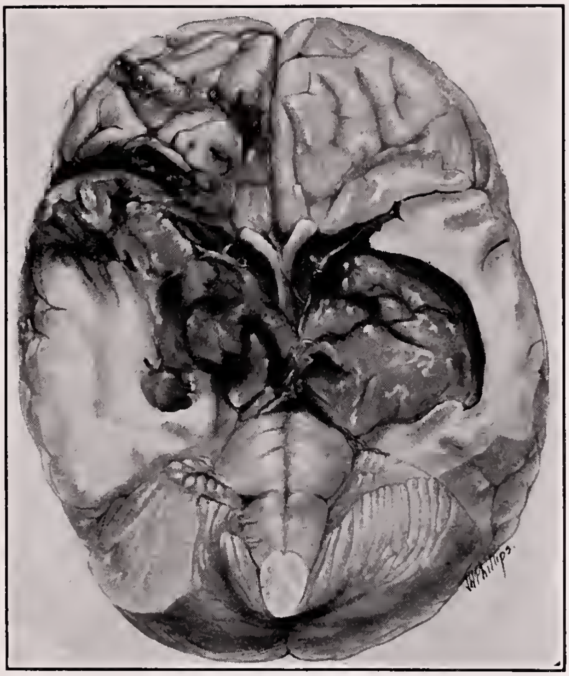

Fig. 15. A tumor of the pituitary extending well into each hemisphere and having a "terminal" choked disc.

ventricle. Tumors of the optic thalami never show early choked disc (fig. 13). Some of these tumors are of enormous size and extend well into the substance of the hemisphere in which the lesion occurred. Cysts and tumors of the pituitary (figs. 14 and 15) likewise can be of very large size before choking occurs, because of the fact that they extend into the substance to either side, but always above the cavernous sinus and, therefore, do not cause a retardation of circulation until the terminal stage.

CONCLUSIONS

1. Choked disc or papilledema is always either the direct or indirect result of a damming-up of the return venous blood from the eyeball.

2. The time of its appearance depends upon the location of the tumor and occurs in the following sequence: (a) Cavernous sinus, (b) petrosal sinuses, (c) lateral or transverse sinuses, (d) occipital fossa, (e) parietal fossa, (f) frontal fossa, (g) central nuclei.

3. Direct pressure, as against the petrosal or cavernous sinuses, causes early choked disc, while indirect pressure, as in edema of the brain, or dilated lateral and third ventricles or both, causes late choked disc.

4. The cerebrospinal fluid pays but an indirect part in the causation of choked disc, and then only by increasing the general intracranial pressure and not by direct extension into the disc from the vaginal sheath of the optic nerve.

Bibliography

1. Parsons, J. Herbert: Pathology of the Eye, Vol. 4, 1362.

2. Parsons, J. Herbert: Pathology of the Eye, Vol. 3, 949.

3. Davis, Loyal: Decompression Operation, Sec. on Nerv. and Ment. Dis., J.A.M.A., 1925, 211.

4. Bordley, Jas. Jr. and Cushing, Harvey: Observations on Choked Disc, J.A.M.A., 52: 353, Jan. 30, 1909: Bull. Johns Hopkins Hosp., 20:95, 1909.

5. Hill, Emory: Some Observations Concerning Papilledema, Jackson Birthday Volume Ophthalmology, 32.

6. Swift, G. W.: Am. Jour. Oph., 1921. Vol. IV, p. 124.

7. Parker: Relation of Choked Disc to the Tension of the Eyeball, J.A.M.A., 1916, 67:1053.

8. Stone, W. J., and Swift, G. W.: Influenza and Influenzal Pneumonia at Fort Riley, Kan., from Sept. 15 to Nov. 1, 1918. J.A.M.A. 72:4870493, Feb. 15, 1919.

Ineffectual Attempt to Cultivate Glover Organism from Carcinomas. Although they followed the methods of Glover as described by him very cautiously, John A. Kolmer, Malcolm J. Harkins and Eli Saleeby, Philadelphia (*Journal A. M. A.*, Nov. 26, 1927), failed to confirm Glover's observations. In no instance was an organism isolated having any of the morphologic or cultural characteristics of that decribed by Glover. Twelve of the seventeen tissues studied showed no growth at all, while five showed the presence of organisms unlike that described by him. Furthermore, cultures of the Rous fowl sarcoma (number 1) yielded negative results, as likewise cultures of a mouse carcinoma.

O-IODOXY BENZOIC ACID IN THE TREATMENT OF ARTHRITIS*

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and
Keith S. Burns, M.D.

Before going into the subject matter of this paper, we wish first to emphasize the point that this is not a dissertation on arthritis but merely a report of the results of treatment on all types of arthritis by one particular drug. In presenting these twenty-four cases of the arthritis as treated by this new method, we realize that it requires many more cases and much more time to arrive at a definite conclusion as to the real value of the method. We hope you will, therefore, consider this as a preliminary report. We will at some future date give more complete data as to the permanency of the results.

The patients on whom this treatment was used were both private and charity cases from the City Clinic and City Hospital. We wish at this time to give full credit to Drs. H. Dedman and H. E. Nichols and various interns at the City Hospital for their valuable suggestions and assistance given us in handling these many cases.

The treatment used was intravenous injection of an ammonium salt of *o*-iodoxy benzoic acid. This treatment was first originated at the University of Michigan by Drs. Young and Youmans about three years ago and has been used by them ever since with exceptionally good results. Recently they reported the results of forty-three cases with only seven per cent of outright failures.

Dr. Millard Smith of Boston has reported good results in a series of thirty-three cases. These were reported in the *Boston Medical and Surgical Journal,* February, 1927. Smith used the drug intravenously, orally and rectally and feels that considerable action is obtained with the latter two methods. We have only used it intravenously and so can not comment on other phases of it. It seems, however, that in many of Smith's cases only a limited number of intravenous injections were used and it occurs to us that, had he followed up the injections, he might have gotten even better result than he did.

The exact action of this drug is not entirely clear. Smith considers it as acting similarly to the salicylates except that it is very much more potent. There is certainly some similarity in its chemical formula. But *o*-iodoxy benzoate contains more loose oxygen and also iodine. From our observations of the individual reaction it seems to us to have a more or less specific action on mucous membranes. The iodine and loose oxygen possibly act as disinfectants to some extent. It has been definitely shown that the drug causes a marked leukocytosis in healthy dogs but this does not seem to account for the rapid improvement in many cases of arthritis. If we can accept the theory that arthritis is infection and arthritic pain due to irritative synovitis, then a specific disinfectant action of *o*-iodoxy benzoate on mucous membranes would seem to account for the results obtained.

The drug is prepared in powder form by Abbott Laboratories under the trade name of amiodoxyl benzoate. It is very soluble in water or normal saline. The method of treatment is similar to that of old salvarsan. The usual dose is one gram, dissolved in 100 c.c. of warm normal saline. This is injected into the vein by gravity. Not less than ten minutes should be consumed in an injection.

The patient usually has considerably reaction during and after injection. After about 25 c.c. are used the patient complains of tingling of the tongue. This is followed by smarting and itching in the nose and throat, bronchial irritation, conjunctivitis, pain and smarting in the joints themselves. Several cases have had abdominal pain and spasm. Hemorrhoids or fissures in ano if present become painful. A few cases were nauseated but did not vomit. Transitory headache is common. These symptoms subside gradually and have usually disappeared within an hour or so. Generally speaking, the reactions are severe enough to cause the patient real discomfort and some have discontinued treatment on account of it. But most patients will stand the discomfort because of the ultimate relief obtained.

As can readily be seen from the above description, the symptoms all point to mucous membrane reaction. Hence our deductions that the drug acts specifically on mucous membranes. It is very possible that there is a general disinfectant action. Smith used it in one case of acute rheumatic fever. One injection was given, followed by burning sensations in the affected joints. Relief from former pain followed soon after and the next morning the patient was completely relieved, the temperature dropped to normal and remained so.

It is important to keep in mind that this method of treatment is not a cure-all but merely an adjunct to general measures. It is, therefore, imperative that the patient should be gone over thoroughly for foci of infection which should be removed if found. Much could be said about the subject of focal infection in arthritis but we will not discuss it here. Other aspects of all cases should be studied, such as faulty metabolism, glandular disturbances, etc. If contractures are present we have found it best to apply orthopedic measures during the course of the treatments, as they seem to respond better after the first relief of pain and spasm.

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* Read before a Meeting of King County Medical Society, Seattle, Wash., Oct. 10, 1927.

It is impossible to say when to expect the first sign of relief. Some cases seem to respond after the first treatment, while several which finally got complete relief showed no improvement till seven injections had been given. We have come to consider ten treatments as the only fair test. No more than ten have been given in any one course, although more treatments have been administered after a rest interval of four to six weeks.

We have not picked or selected our cases but have taken them as they came, good, bad or indifferent. Therefore, we have a fair sprinkling of all types except acute rheumatic fever which we have not had courage to attempt thus far. The following case reports are typical.

Case 1. This case was a girl of thirty who had been confined to bed for about twelve years with severe deforming type of arthritis. She had many contractures and generalized joint pain. She was practically helpless and it was necessary to keep her fairly well drugged for pain. After the third treatment her morning stiffness had disappeared and there was considerable relief from joint pain. After the eighth treatment pain was entirely gone and the patient was pushing herself about in a wheel chair but could not walk because of contractures of the knee. These were treated orthopedically and she can now walk with aid of a cane. She is now on her second course of treatments.

Case 2. Callahan, male, age 42. Admitted with a very acute knee. Some temperature. Duration of disease two weeks. Diagnosed gonorrheal clinically. Put to bed with hot packs. Injections were begun at once with very severe reactions but with marked improvement after each treatment. At the end of the fifth treatment the knee was normal in appearance and with almost complete motion. Slightly tender to pressure over the joint crevasse. No recurrence reported after four months.

Case 3. Cavanaugh, female, age 40. Polyarthritis of mixed type. Complained of pain in knees, hips and shoulders, and marked stiffness in morning. Stated that she was unable to sleep more than two hours at a stretch. Did not respond to treatment until the sixth had been given. Improved rapidly. Sleeps well, now. Still complains of some pain in both knees, all other joints having cleared up completely. Is having second course now.

Case 4. K., female, age 35. Atrophic arthritis affecting spine, shoulders, neck and knees. Had six treatments without results. Relief began after seventh and continued after each injection. After the tenth she stated she had no pain except very slight in one shoulder. Subsequent correspondence indicates that she has some recurrence of symptoms of neck and knees but not as bad as before.

Case 5. B., male, age 40. Bed ridden for over six weeks with sciatic neuritis due to arthritis of spine. No pain in spine. Infected teeth removed and no improvement under two courses of oxyl iodide and neocincophen of two weeks each. Amidoxyl began May 23 and patient walked after fifth treatment. Discharged July 18 cured. No recurrence of any symptoms to date.

Case 6. H., male, age 36.. Arthritis right knee. Only joint involved. No history of injury. Prepatellar bursa markedly distended. Fluid aspirated and tight bandage applied with hot pack. Amiodoxyl began immediately. Only five treatments given. Pain and swelling gone after third treatment. Discharged cured.

Case 7. D. L., male, age 52. Arthritis for two years. Light and vaccine treatment at county hospital. Radiograms show old hypertrophic arthritis of lumbar and sacral spine and joints. Old gonorrheal history six years ago. Prostatic infection. Ten treatments, no improvement. Is under treatment by by the genitourinary department now.

Case 8. J. M., male, age 58. Old hypertrophic arthritis of the lumbar spine, hips, knees and hands. Has not worked for over two years; in bed part of time. Walks with a cane. Had ten treatments with complete relief of symptoms. Since his last treatment he has packed on an average of five tons of coal a day for the last two months. He had no return of symptoms up to a week ago.

Case 9. G. P., female, age 30. Pain and stiffness in the right shoulder. All movements limited and very painful. Only joint involved. Duration several months. Radiogram negative. Diagnosis, synovitis and beginning arthritis of the right shoulder. Six injections given with complete relief of symptoms and discharged as cured.

Case 10. A. J., male, age 66. Pain in the arms and shoulders with swelling of the entire left leg. Neisser infection several years ago. No prostatic involvement or other evidence of focal infection. Radiogram shows hypertrophic arthritis of the shoulders and left hip. Ten treatments given and the patient states he has improved about fifty per cent. No relapses reported.

In summarizing our results we find some interesting facts. Three cases of gonorrheal arthritis were treated. All of these got prompt and apparently permanent relief. The most stubborn case required only five treatments for complete relief of symptoms.

One case of sciatica only was treated. This case complicated a painless arthritis of spine and was very stubborn and severe. He got complete relief with ten injections and has had no recurrence after three months.

Of the hypertrophic type of cases, of which there were nine, three obtained complete relief and as far as we know have not relapsed after several months time. Four cases were improved over 50 per cent and have remained so. One case was a complete failure.

The next classification is perhaps a misnomer. We have called it here the atrophic type but it might better be considered nonproductive or nonhypertrophic. It includes all cases which could not be easily classified and which were not hypertrophic. Of these four were completely relieved and have apparently had no relapse. Four cases had over 50 per cent improvement. Two cases were outright failures. One of these was probably an occupational affair. Her pain was in the finger joints and she had some swelling. She works in a laundry as an ironer and we feel that her work may have something to do with her symptoms.

One case was probably an old fracture of the hip with marked proliferation of bone about the joint. This case received ten injections and was somewhat relieved of pain but function was no better. One hypertrophic case did not return for his complete course of treatments because of the severity of reaction. He states, however, that he is somewhat improved.

From the above data we can arrive at the following conclusions: 1. Of the twenty-four cases treated eleven, or about 46 per cent, were completely relieved and have remained so. 2. Nine cases, or 37.5 per cent, were markedly improved. 3. Three cases, or 12.5 per cent, were not improved or only slightly improved. 4. One case failed to complete his treatments.

In general we find that the most hopeful and satisfactory cases are those of the acute type of no long standing. Gonorrheal arthritis as a class seems to give the best results of all.

We are convinced that amiodoxyl benzoate is certainly not a panacea for the arthritic but it is the best single drug which has so far been developed. We say this not entirely from our experience with the drug, for as yet sufficient time has not elapsed to determine the permancy of our results.

But from the results of Youman and Young, Smith and others, together with our own, we feel that amiodoxyl benzoate is worthy of serious consideration.

Myelophthisic Splenomegaly. A new clinical and pathologic type of splenomegaly is described by Max Ballin and Plinn F. Morse, Detroit (*Journal A. M. A.*, Nov, 12, 1927). It is characterized by a distinctive blood picture, differing from the recognized types of splenic enlargement on the basis of the blood picture, the lack of evidences of excessive hemolysis in the blood and urine, the absence of disturbance in red blood cell fragility, and by the definite histologic picture. The prognosis is good.

STRUCTURAL SCOLIOSIS

PRESENT STATUS OF THE TREATMENT*

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In his history of scoliosis Lovett states that this term dates much farther back than the recognition of the affection itself. The Greek word for scoliosis, meaning to bend or twist, was first used by Hippocrates who lived four centuries before the beginning of the Christian era. He supposed that the deformity was due to a dislocation of the vertebræ which demanded reduction only.

For 2000 years following Hippocrates scoliosis attracted little attention and no advance was made. There was some progress during the eighteenth century and this mainly through the writings of Andre who suggested gymnastics and apparatus as a means of treatment. Percival Pott in 1779 made the first conclusive differentiation between tuberculous conditions of the spine and true lateral curvature. Lewis Sayer in 1878 advocated the treatment of spinal curvature by suspension and a plaster of paris jacket. The jackets were removable for purposes of daily gymnastic exercises. His treatment was mild but really the beginning of the modern idea, i.e., the combining of physical training with the retention apparatus.

At the close of the nineteenth century and the early part of the twentieth century a new conception of scoliosis was formulated, which was founded on anatomic and pathologic considerations much in advance of earlier opinion. The chief idea of treatment was that of forcible correction by means of the plaster cast. Various technics of application were advocated by Calot, Shanz, Lovett, Wullstein, Abbot and others. Most of these have their adherents today, although the details have been greatly elaborated.

The treatment of scoliosis is still far from satisfactory. It presents one of the greatest problems to the orthopedic surgeon. The patient with a marked deformity is seriously handicapped socially and economically. His years of life are markedly shortened. These unfortunates are entitled to the best scientific methods available.

Scoliosis may be defined as a persistent lateral deviation of the spine to one side or the other with rotation of the vertebræ. Scoliotic curves may be divided generally into two classes: postural curvatures and structural curvatures. In this paper we will only consider the latter class. The treatment of functional curves is a problem in itself and the deformity if not treated may progress into the structural type.

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* Read before the Fifty-third Annual Meeting of Oregon State Medical Society, Salem, Ore., Sept. 1-3, 1927.

According to etiology structural curves may be divided into four classes.

1. *Paralytic Scoliosis.* These are the cases that follow in the wake of anterior poliomyelitis and make up a large percentage of the severe cases. Especially have we found this true in the Shriners' Hospital for Crippled Children, where the infantile paralytic cases run about 56 per cent. Hibbs is of the opinion that all scoliotic curves are due to poliomyelitis, while Kleimburg reports 5 per cent as due to this malady. We believe the percentage is even higher than our statistics show but are unable to establish this from the history and physical examination.

2. *Congenital Scoliosis.* These are the cases in which the deformity is present from birth or soon after, due to congenital malformation of the vertebral bodies, consisting of wedge-shaped vertebræ with resulting early curves. Untreated, these cases have a tendency to break down rapidly and usually a considerable curve is present before they are brought in for treatment.

3. *Rachitic Scoliosis.* These curves are also unstable. This type of scoliosis is the result of weakening or softening of the vertebræ, due to pathologic bone changes incident to rickets. Rachitic scoliosis advances rapidly, usually reaching its maximum deformity early, and because of sclerosis of the bones, incidental to the recovery from rachitic changes, the deformity remains fixed or constant.

4. *Habitual or Idiopathic Scoliosis.* A large number of cases are placed in this group whose cause is unknown or unrecognized. Separate from this general classification are a great many sporadic types, among which are traumatic, spastic, empyemic, pleuritic, sciatic, those due to torticollis, etc.

Lovett has shown "that pure lateral deviation of the vertebral column is always accompanied by rotation of the vertebræ around a vertical axis in such a way that their bodies look toward the convexity of the curve, while the spines, laminæ and articular processes are directed toward the concavity. The bodies become wedge-shaped from side to side in conformity with the curve.

"The muscles and ligaments are altered in length. Such a deformity of the spine is accompanied by a disturbance of the whole balance of the body. In the thorax the ribs accompany the transverse processes so that they form a convexity on the same side as the convexity of the spine. As seen from the front there is a flattening of the ribs on the side of the convexity and projection on the side of the concavity. The thoracic and abdominal viscera are distorted and displaced."

When curvature of the spine develops, nature in her attempt to maintain body alignment and equilibrium causes other curves to develop in order to counteract the original curve. These secondary or compensatory curves may be one or several. If the primary curve progresses rapidly, the muscles and ligaments fatigue, compensation stops; then a list of the body to one side is noted as well as a high shoulder on one side and a protruding hip on the other. This will result in a rapid disalignment of the body as a whole. The break in compensation usually occurs at the dorsolumbar junction, due to the fact that the motion here is most free and that the muscles are so situated that they use this joint as a fulcrum.

It is usually after the break in compensation has occurred that the parents become aware of the deformity and seek medical attention, and it is this delay that makes the treatment of scoliosis such a difficult task.

At the Shriners' Hospital we are following the method of treatment advocated by Steindler, namely, the substitution for alignment by direct correction, the principle of indirect alignment by compensation. The theory back of Steindler's method may be stated briefly: Nature in attempting to maintain body alignment forms compensatory curves. Why is it not logical to assist nature in the formation of these curves and carry them farther and to completion, if possible? Untreated, these curves are usually not completely formed. However, it is true that many structural curves do not progress farther than a certain point because compensatory curves are formed and muscle balance is restored. We know that primary rigid curves resist forceable attempts at correction.

In this method the force applied is spent in reshaping the moveable adjacent sections above and below the original curve. No attempt is made to loosen the rigidity of the primary curve, except as far as its ends are drawn into compensatory curves above and below. Steindler recommends that no direct force be applied to the primary curves, but we find that by properly padding over the gibbus the secondary curves can be more easily demonstrated. The pelvis is included in the formation of the lower compensatory curve.

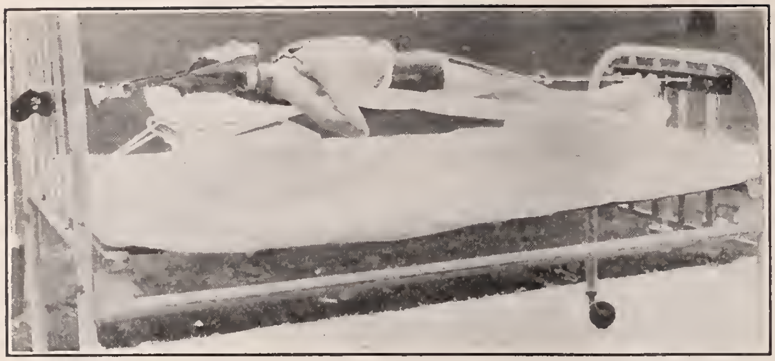

Fig. 1. Patient on Bradford frame with head and pelvic extension applied.

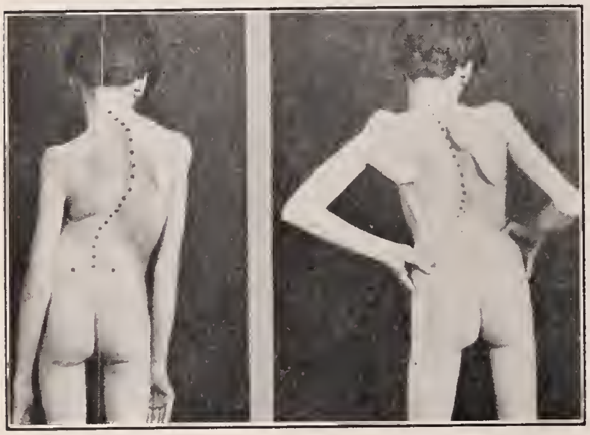

Fig. 2. Shows active shift to the concave side.

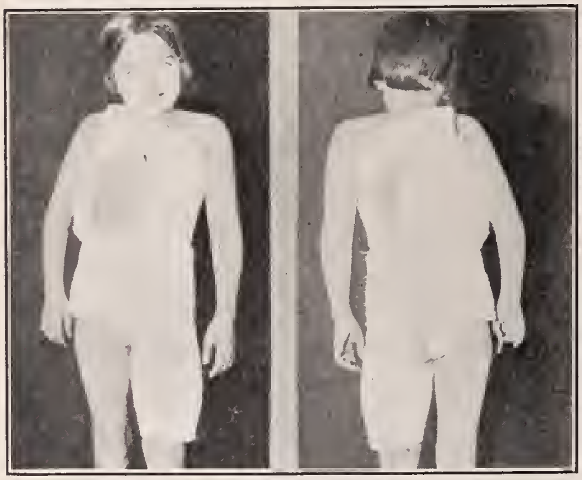

Fig. 3. Shift cast with windows cut for padding.

The first period of treatment is that of gymnastics and extension on the Bradford frame. When the patient is admitted to the hospital measurements are taken as well as x-ray and photographic records. The child is placed on a Bradford frame and head and pelvic extension is applied (fig. 1). The amount of pull depends upon the severity of the curve and the size of the patient. The ordinary child can stand without discomfort ten pounds head pull and from thirty to forty pounds pelvic pull. Breath to forty pounds pelvic pull. Breathing exercises are given with the patient on the frame and where there is great deformity of the chest he is given Wolfes bottles to blow. Each day from one to two hours are spent in the gymnasium, where exercises and manipulations are carried out, consisting of stretching, bending, swimming and rotatory exercises; active arm and shoulder girdle drill; active shifting of the spine toward the concave side with the hands pushing upward from the hips (fig. 2), and finally Klapp's creeping exercises. This first stage requires from one to two months and is continued until as much compensation as possible is secured.

The second stage of treatment is that of fixation. It is accomplished by means of a series of plaster casts. These are applied by suspending the child with the head sling, elevating the arm on the concave side, and abducting the hip on the same side. The patient then shifts, carrying the trunk strongly toward the concave side. This accentuates the compensatory lumbar curve. In order to compensate for rotation, the primary curve is held by an assistant and the shoulder and pelvis on the concave side are rotated backward. In order to immobilize the pelvis the thigh on the concave side is included in the cast (fig. 3). The fixation in plaster usually extends over a period of two or three months.

If after this period of fixation the spine is completely compensated, i.e., the body alignment good, the spine stable and the muscles strong enough to maintain the corrected position, the child may be sent home in a brace after having received another course of gymnastic exercises. On the other hand, if the spine is unstable and the musculature weak, operative fusion is indicated. When fusion is decided upon a plaster bed is prepared (fig. 4) and the spine fused after the method of Hibbs. A minimum of three months should be spent in the plaster bed, after which measurements or an impression plaster should be taken for a scoliosis brace (fig 5). A body plaster is then applied for one more month, during which time the child is allowed to sit up and at the end of the fourth month to begin walking The brace is then fitted and should be worn for one year.

The operation itself is only an incident in the

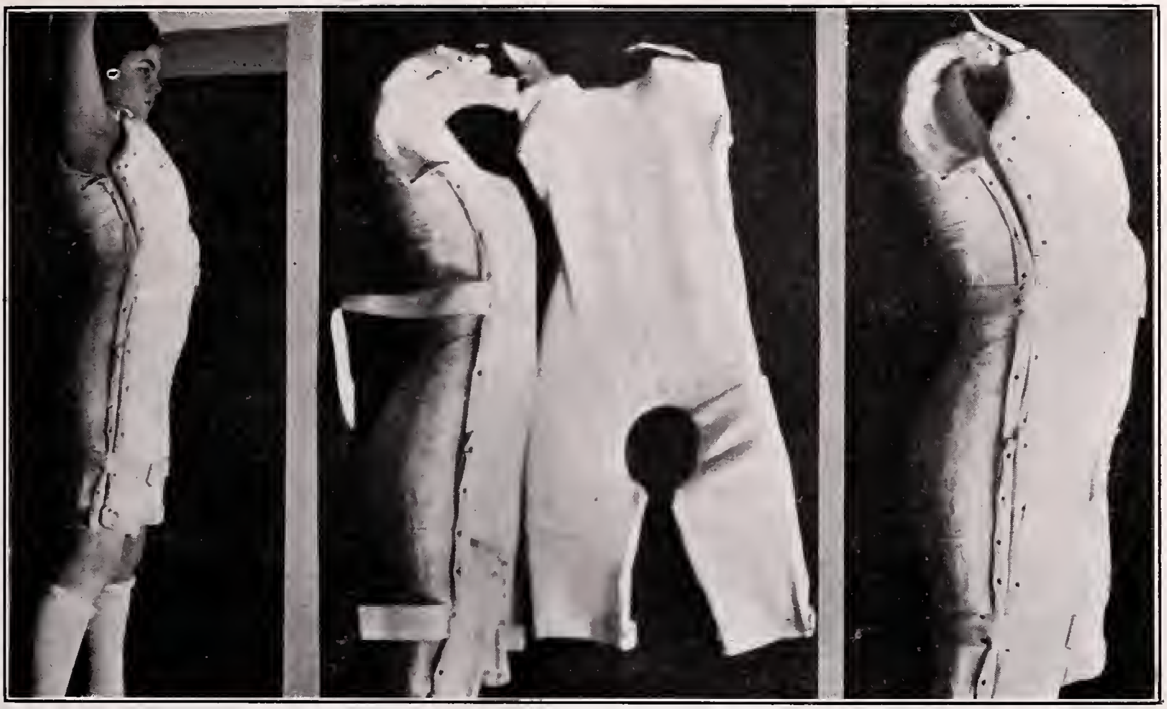

Fig. 4. Plaster bed for post Hibbs fusion cases.

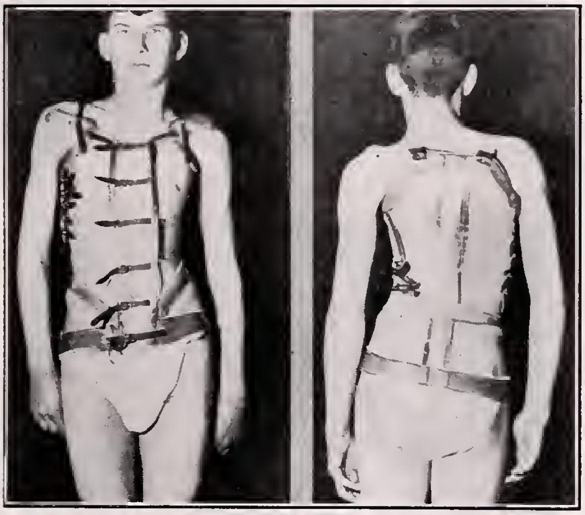

Fig. 5. Typical scoliosis brace.

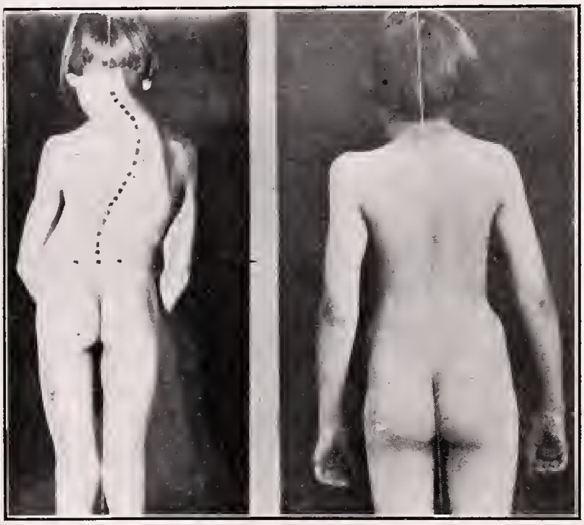

Fig. 6. Marked right structural upper dorsal scoliosis before and after fusion operation.

treatment of scoliosis. The greater time and energy should be spent on the treatment leading up to it. In performing the operation it is better to include too many vertebræ than not enough, going well above the apex of the primary curve and extending well below the lumbodorsal junction, taking in the fourth and fifth lumbar vertebræ if necessary. Inclusion of the lumbosacral joint is not contraindicated. If the patient is not an exceptionally good operative risk, the operation may be done in two stages. Appearance of scoliotic spines before and after fusion are shown in fig. 6.

Scoliotic curves cannot be watched too carefully. We require these patients to report for observation once a month. A series of photographic and x-ray records are kept and comparisons are made frequently to determine the progress of the curve. It is well to bear in mind that the x-ray plate may show a marked structural curve, where clinically it may hardly be perceptible.

WEAK FEET AND POSTURAL DEFECTS*

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The erect position must be maintained by effort and coordination of voluntary muscles. Any deviation from a perfect coordination, whether from habit, carelessness or disease, will cause faulty posture which, if persisted in, will result in overdevelopment of certain muscles with a corresponding weakness of others, together with stretching and relaxation of the ligaments and faulty joint coaptation. It is not the purpose of this paper to consider defects resulting from paralysis of individual or groups of muscles, caused by injury or disease, in which either sensory or trophic nerve impulse has been altered or destroyed—but to confine the discussion to such postural defects as may be related to weak feet.

Many faulty postures, especially in children, are the result of weak foot conditions, while occasionally weak or distorted feet will result from faulty posture. A pronated ankle will cause the hip to rotate forward, the knee to be adducted and the pelvis to tip forward, resulting in lordosis or swayback in the lower spine. If an unequal foot condition exists, such as a pronation of one ankle with a normal or everted condition of the other, a lateral tipping of the pelvis occurs which may result in scoliosis. Several cases of knock-knee with pronation of the ankle have been cured by the simple method of correction of the foot distortion and stimulating the ligaments and muscles involved. These cases have usually been attended by lordosis which has been much improved. Treatment should be started early before there is too much fixation of parts.

The internal and external longitudinal arches are generally responsible for postural defects, although the transverse or tarsometatarsal arch is always involved in weakness of either of the longitudinal arches. The sagging of either of the longitudinal arches, and especially the inner, causes rotation of the entire leg and hip with a consequent strain and lack of balance of the muscles, with distorted nerve impulse, sometimes involving the pelvis and trunk.

The child under two and one-half years has a fat pad under the internal longitudinal arch which is often mistaken for flat foot. A diagnosis is easily made by a study of the heel condition. If the child stands squarely upon the os calsis, with the tendo achillis perpendicular to the bearing surface, there is no distortion of either longitudinal arch. If, however, the os calsis rotates either inward or outward, with an attending angulation of the tendo achillis, there is weakening of one or the other longitudinal arch. The deformity is most marked with the sagging of the inner arch.

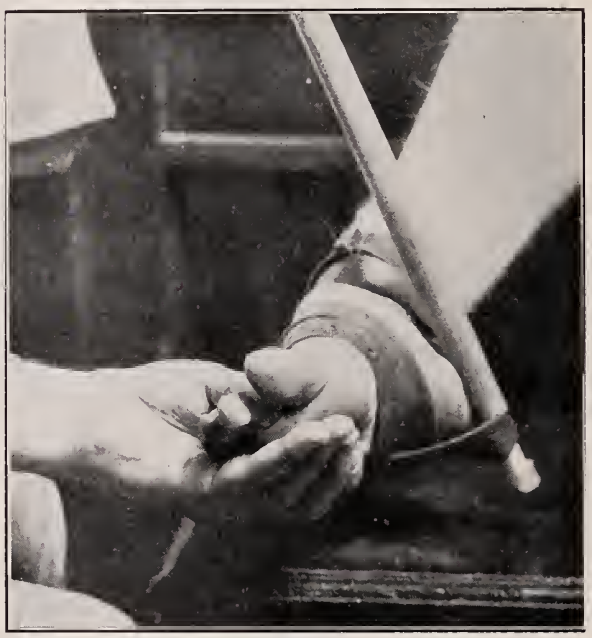

Fig. 1. Heel lever.

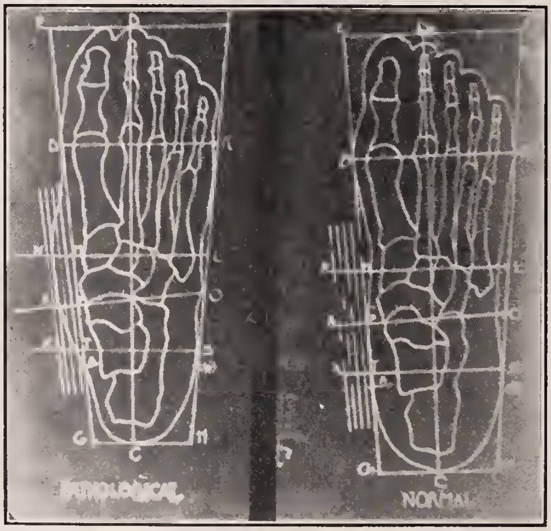

Fig. 2. Showing application of survey to bone structure of foot.

The first essential in the treatment of the weak or fallen arches is the straightening of the heel. In the recent flexible cases, often a pad or heel adjuster inside the shoe is all that is necessary. In cases of long standing, and especially where there is rigidity, considerable force is necessary, and the heel lever may be required to break up the adhesions and force the bones into their natural positions, the principle force being applied against the os calsis and astragalus. The device I use is simply a strap about the ankle and heel which permits the use of a stick about two feet long as a lever for exerting additional force. After the adjustment, strapping or casting is necessary for a short time before beginning the building up and muscle training process (fig. 1).

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* Read before the Fifty-third Annual Meeting of Oregon State Medical Society, Salem, Ore., Sept. 1-3, 1927.

In order to determine the amount of deviation from the normal and the anatomic parts involved, a survey is necessary. This consists of a photopedigram with the tracing of the outline of the foot, with cross sections which locate the important bony structures in relation to certain base lines. This permits the intelligent placing of supports in the process of rebuilding and is a permanent record which may be compared with future development (fig. 2).

The object of this special field of orthopedics is to rebuild as far as possible a normal foot anatomically, and restore normal function without the continued use of supports. In order to accomplish this it is essential to accompany the rebuilding process with such physiotherapy, massage and exercises, as will restore the circulation, nervous impulse, and general tone to the muscles and ligaments.

My treatment of postural defects has been confined to the treatment of weak feet and attending deformities, although I have followed the work of Lillian Curtis Drew and R. Tait McKenzie, and believe much may be accomplished in the use of special apparatus and gymnastics in the correction of bodily deformaties, due to or accompanied by postural defects from causes other than paralysis.

In the treatment of weak feet and fallen arches, nearly every kind of physiotherapy has been used, and every conceivable exercise employed at one time or another, often without intelligence or reason. In my practice, except where special electric stimulation seems indicated, the feet are baked under an electric light baker for twenty or thirty minutes. This seems to produce the necessary relaxation for the remolding, and is safe and convenient. One attendant can treat three or four patients at the same time, which would be impossible with the various forms of high frequency current.

For the home and office treatment several kinds of apparatus may be procured on the market, all perhaps based on Sir Robert MacKenzie's treatment of English soldiers during the war. It was his custom to require soldiers with weak arches to walk back and forth for twenty minutes each day in the bare feet, on the rungs of a ladder placed flat on the ground. He claimed that advanced weak feet could be cured by this method in thirty days.

The late Dr. Charles Cross, of San Francisco, worked out what he called a manipulator, a modified form of which I find valuable in carrying out home treatment. The apparatus consists of a board twelve inches square and two inches thick, of any material that will take a smooth polish and not dent under the pressure of the rollers. With this is two pair of rollers. One pair, somewhat dumbell in shape, is placed crosswise under the longitudinal arches. The manipulation is accomplished by a forward and backward motion while the patient is seated, a greater amount of pressure being placed on the rollers as the feet improve. Later the patient may stand with full weight on the rollers during the exercise. The corrugated set of rollers is placed under the anterior metatarsal arches parallel to the long axis of the feet, the exercise being attained by a side motion of the feet while the patient is sitting. I do not use stock apparatus but make my own, which enables me to vary the size and shape to suit the individual case (fig. 3).

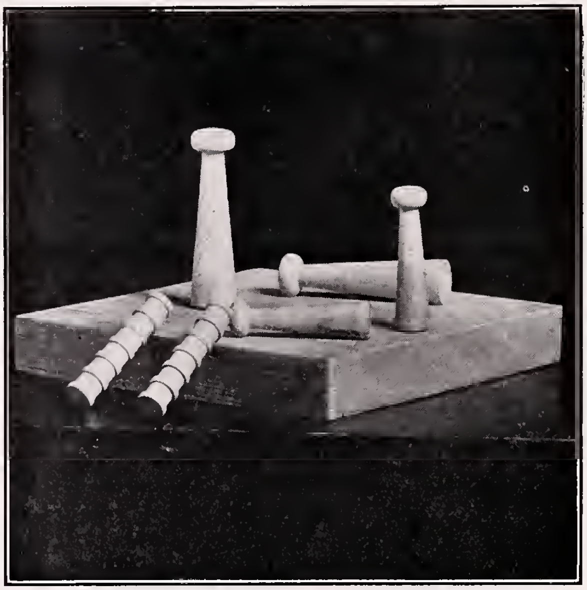

Fig. 3. Manipulator.

Aside from ill fitting and faulty shoes, rickets and general debilitating diseases are the more common causes of weak feet in children, and wherever present must be treated to insure satisfactory results. As far as possible the treatment of intercurrent diseases is left to the family or attending physician. In adults the possibility of complications of rheumatism, arteriosclerosis and diabetes should be borne in mind.

Naturally the support of this specialty, if it is a specialty, should come from cases referred from the medical profession. In practice, however, I find the greatest number of new patients are sent to me by satisfied former patients, with the shoe dealer second and the medical profession rather a poor third. I do not believe this is due to any unethical practice, or the belief on the part of the profession that any advantage may be taken of referred cases, but rather to a lack of knowledge of the possibilities of this field, and the tendency to overlook the part played by weak feet and arches in the symptom-complex in certain painful conditions of the lower limbs, pelvis and trunk, and especially those attended by postural defects.

First National Bank Bldg.

Laboratory Aid for Complications in Abdominal Surgery. A test is described by William Thalhimer, Milwaukee (*Journal A.M.A.*, Nov. 26, 1927), for determining the bactericidal power of the blood against pyogenic cocci, such as staphylococci and streptococci. The test is performed with blood prevented from clotting by the addition of heparin. The use of whole blood is important. Duplicate tests give results within about 3 per cent of one another, and a difference of this degree has no significance in interpreting the test. The need for and the usefulness of this test has been apparent for a long time. To surgeons it will be of more use before operations than in postoperative complications. Thalhimer believes that he can determine the resistance of an individual before operation to staphylococci and streptococci, as well as to gram-negative organisms. One of the most important substances which cells need in order to carry on their functions is oxygen, and after an operation and in the presence of infection oxygen is even more important to the cells than under normal conditions. If anemia is present before an operation it should be corrected before the operation is performed. If it occurs after an operation, whether from loss of blood or from some other cause, such as an infection, it is a particularly serious condition. In conditions of preoperative anemia, or anemia which develops within the first six days of the postoperative period, this diminution in the oxygen-carrying power of the blood caused by the anesthetic may have a serious significance. If a patient with a hemoglobin of 70 per cent, which is not considered especially low by most surgeons, should have the oxygen-carrying power reduced by 25 per cent, he will then have the equivalent of an anemia with the hemoglobin at about 50 per cent. The laboratory is of aid in discovering abnormalities in the acid-base balance of the blood, in indicating the treatment and in controlling the treatment. With proper feeding before operation, elimination of the preoperative cathartic, the use of transfusions when necessary, and of ethylene anesthesia, postoperative acidosis occurs rarely. In marked alkalosis the carbon dioxide combining power of the blood plasma is raised, the blood chlorides lowered, and the blood nonprotein nitrogen increased. The cause of lowering of the blood chlorides is not known, but it certainly can occur when there has not been loss of hydrochloric acid by vomiting.

EUGENICS IN OREGON*

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Superintendent Oregon State Hospital

One of the greatest problems of any government is the regulation and custodial care of its misfits or incompetents. Oregon, along with eighteen states, is carrying on the movements of eugenics. After two Oregon legislatures had passed laws to this end, which were vetoed by the Governor of the State, a law passed which is part of the Oregon Statutes. This law was scrutinized by George M. Brown, a Supreme Justice who was then Attorney General, assisted by the present Attorney General Van Winkle. This problem is so momentus that opposition has sprung up from many religious and well meaning sources. Finally, before we could be sure of our procedure, a decision from the United States Supreme Court was necessary to establish a certain and definite decision as to our duty.

The necessities of such a law is a problem of the world. How can I better present this problem than by quoting the decision of the Supreme Court of the United States which was handed down by Justice Holmes, the son of Dr. Oliver Wendell Holmes:

May 2, 1927. Mr. Justice Holmes delivered the opinion of the Court..

"This is a writ of error to review a judgment of the Supreme Court of Appeals of the State of Virginia, affirming a judgment of the Circuit Court of Amherst County, by which the defendant in error, the superintendent of the State Colony for Epileptics and Feeble Minded, was orderer to perform the operation of salpingectomy upon Carrie Buck, the plaintiff in error, for the purpose of making her sterile. 143 Va. 310. The case comes here upon the contention that the statute authorizing the judgment is void under the Fourteenth Amendment as denying to the plaintiff in error due process of law and the equal protection of the laws.

"Carrie Buck is a feebleminded white woman who was committed to the State Colony above mentioned in due form. She is the daughter of a feebleminded mother in the same institution, and the mother of an illegitimate feebleminded child. She was eighteen years old at the time of the trial of her case in the Circuit Court, in the latter part of 1924. An Act of Virginia, approved March 20, 1924, recites that the health of the patient and the welfare of society may be promoted in certain cases by the sterilization of mental defectives, under careful safeguard, etc.; that the sterilization may be effected in males by vasectomy and in females by salpingectomy, without serious pain or substantial danger to life; that the Commonwealth is supporting in various institutions many defective persons who if now discharged would become a menace, but if incapable of pro-creating might be discharged with safety and become self-supporting with benefit to themselves and to society; and that experience has shown that heredity plays an important part in the transmission of insanity, imbecility, etc. The statute then enacts that, whenever the superintendent of certain institutions including the above named State Colony shall be of opinion that it is for the best interests of the patients and of society that an inmate under his care should be sexually sterilized, he may have the operation performed upon any patient afflicted with hereditary forms of insanity, imbecility, etc., on complying with the very careful provisions by which the act protects the patients from possible abuse.

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* Read before the Fifty-third Annual Meeting of Oregon State Medical Society, Salem, Ore., Sept. 1-3, 1927.

"The superintendent first presents a petition to the special board of directors of his hospital or colony, stating the facts and the grounds for his opinion, verified by affidavit. Notice of the petition and of the time and place of the hearing in the institution is to be served upon the inmate, and also upon his guardian, and if there is no guardian the superintendent is to apply to the Circuit Court of the County to appoint one. If the inmate is a minor, notice also is to be given to his parents, if any, with a copy of the petition. The board is to see to it that the inmate may attend the hearings if desired by him or his guardian. The evidence is all to be reduced to writing, and after the board has made its order for or against the operation, the superintendent, or the inmate, or his guardian, may appeal to the Circuit Court of the County. The Circuit Court may consider the record of the board and the evidence before it and such other admissible evidence as may be offered, and may affirm, revise or reverse the order of the board and enter such order as it deems just. Finally, any party may apply to the Supreme Court of Appeals, which, if it grants the appeal, is to hear the case upon the record of the trial in the Circuit Court and may enter such order as it thinks the Circuit Court should have entered. There can be no doubt that, so far as procedure is concerned, the rights of the patient are most carefully considered, and as every step in this case was taken in scrupulous compliance with the statute and after months of observation, there is no doubt that in that respect the plaintiff in error has had due process of law.

"The attack is not upon the procedure but upon the substantive law. It seems to be contended that in no circumstance could such an order be justified. It certainly is contended that the order cannot be justified upon the existing grounds. The judgment finds the facts that have been recited and that Carrie Buck 'is the probable potential parent of socially inadequate offspring, likewise afflicted, that she may be sexually sterilized without detriment to her general health and that her welfare and that of society will be promoted by her sterilization,' and whereupon makes the order. In view of the general declarations of the legislature and the specific findings of the Court obviously we cannot say as matter of law that the grounds do not exist, and if they exist they justify the result. We have seen more than once that the public welfare may call upon the best citizens for their lives. It would be strange if it could not call upon those who already sap the strength of the State for these lesser sacrifices, often not felt to be such by those concerned, in order to prevent our being swamped with incompetence. It is better for all the world, if instead of waiting to execute degenerate offspring for crime, or to let them starve for their imbecility, society can prevent those who are manifestly unfit from continuing their kind. The principle that sustains compulsory vaccination is broad enough to cover cutting the fallopian tubes. Jacobson v. Massachusetts, 197 U. S. 11. Three generations of imbeciles are enough.

"But, it is said, however, it might be if this reasoning were applied generally, it fails when it is confined to the small number who are in the institutions named and is not applied to the multitudes outside. It is the usual last resort of constitutional arguments to point out shortcomings of this sort. But the answer is that the law does all that is needed when it does all that it can, indicates a policy, applies it to all within the lines, and seeks to bring within the lines all similarly situated so far and so fast as its means allow. Of course, so far as the operations enable those who otherwise must be kept confined to be returned to the world, and thus open the asylum to others, the equality aimed at will be more nearly reached."

This decision is a positive index as to the serious thought and wishes of our best minds. Oregon has been well to the front in this movement. Oregon's Board of Eugenics is composed of the members of the State Board of Health, the Superintendents of the State Mental Hospitals, the Feeble Minded School, and the State Penitentiary. Each case reported is given careful legal protection to the person involved, with all possible court review. The members of the Board pay their own personal expenses in this work. Dr. J. N. Smith, Superintendent of the State Institution for Feebleminded, is the fearless and outstanding man in the Oregon work, and everyone should appreciate his work and worth in this movement. The following resume will show the activities of the Board of Eugenics:

OREGON STATE HOSPITAL

	PRIOR TO THE ACT	
Male:	Castrations	20
Female:	Sterilizations	41
	SINCE THE ACT WAS PASSED 1918	
Male:	Castrations	57
	Vasectomies	5
Female:	Sterilizations	79
	Ovariotomies	22
	INSTITUTION FOR FEEBLEMINDED	
Male and	Female sterilizations and castrations	280
	EASTERN OREGON STATE HOSPITAL	
Male and	Female sterilizations and castrations	70
Total		574

The California institutions, according to Dr. F. O. Butler, have sterilized and unsexed more than 4,600. Our adjoining State of Washington has not been active in this line of work. Idaho, at her last session of the legislature, passed a sterilization act similar to the Oregon law.

The financial side of this matter should not be overlooked. In a recent article by Secretary Herbert Hoover, statistics were shown that in the United States the institutional population of the insane was 225,685, with a total expenditure for maintenance of $63,673,159.00, or a general average per capita cost for the year of $282.13. It is generally accepted that the average hospital life of insane patients is ten years; so, at a glance, we can see where $636,731,590.00 of the taxpayers' money will be expended.

This can be greatly reduced, and here is a definite and a certain method which will give society certain and immediate relief. Many could be released on parole if sterilized, and relieve the states of the burden of their care by making themselves self-supporting, or at least partly so. I will cite a few cases in the Oregon State Hospital which are similar to many others:

Case 1. Mrs. M. A., the wife of one of Oregon's noted pioneers, will have been cared for by the State of Oregon fifty years on May 15, 1928, never having been out of the institution on parole at any time during these years. On her side of the family she has produced progeny which is running true to type. Many of her strain have been in the institutions of the state. Three of her boys and two of her daughters were inmates of the Oregon State Hospital, and many are scattered throughout the country. The paternal side of this family has produced a strong, virile strain of people with proper matings.

Case 2. Annie H. D. was admitted to the Oregon State Hospital in March, 1926, the mother of fourteen children. Two died in infancy; twelve are in institutions for the feebleminded. Patient again in advanced pregnancy. Education very limited, can only read and write.

Married first at the age of 18; had ten children by this husband. Husband became insane and was committed in Idaho. Two years later, apparently without divorce, patient married second husband and had four children by him. This husband (1925) was arrested for bootlegging and convicted, later sent to a hospital on account of illness, and from there committed to this institution where he died after a few days.

The wife's blood Wassermann was three plus and she was diagnosed as a case of mental deficiency. In April, about six weeks after admission, she was delivered of a male child, this being the fifteenth. She was sterilized in June, 1926, and was discharged from the hospital on March 17, 1927, as improved.

Case 3. Clara D. T., admitted Oct. 12, 1926. The mother of fourteen children, twelve living; two died in infancy. Patient's mother was insane for two years at the age of 45. Patient had a mental attack at the age of 21 for about two months. Her present age is 45. Three months prior to admission she became very acutely excited, noisy, and shouting mostly about religious ideas. She was diagnosed as a case of manic depressive insanity, manic type.

She was paroled in November, and readmitted from parole Dec. 1, having again had a sudden outburst of excitement, and causing much trouble in the neighborhood with her irrational conduct. Unfortunately this woman was again released for the Christmas week with the promise that she would be returned to the hospital. They took French leave which prevented us from carrying out sterilization.

She had several years more of potential childbearing, and we have no doubt that by this time she has produced another degenerate for the State to care for. She was rabid in her idea of being refused the privilege of bringing more children into the world. Her husband served time in three penitentiaries and regularly had sexual relations with his daughters.

Case 4. Virginia M. Seamon. This patient had three commitments to the Oregon State Hospital. Her husband died in the Oregon State Penitentiary while serving time there for having seduced his daughter. Patient has three children in the Institution for Feebleminded. Her daughter, a young woman, and one of the three who are in the Institution for Feebleminded, recently gave birth to a child supposed to have been by one of the other inmates of that place.

The mother says while they were at home both her husband and son, who is in School for Feebleminded, had intercourse with this daughter. She herself sees nothing wrong with this. She is of the moron type with psychosis, has active periods of disturbance, is easily excited, hallucinated and delusional, always wanting to talk about herself and family. Has exposed herself and made indecent advancements toward others. Patient was past the child bearing age when the sterilization law went into effect. Certainly no case of this kind should ever be discharged or paroled unless sterilized.

In the Sonoma State Home for the feebleminded they had several inmates from one family. In this family were two strains. One strain, the feebleminded woman and the defective and incompetent man in four generations, yielded twenty-five defectives out of a total of thirty-six persons in eight matings. The other strain, the normal sister of the above woman, and the normal brother of the above man, has yielded thirty-nine persons in seven matings with only one dull normal. You are all familiar with the famous Juke family.

Martin Kallikak married a feebleminded girl. In this strain out of forty-one matings there were 222 definitely defective persons. Martin Kallikak was also married to a normal woman, and from this mating all were normal and included many prominent national figures.

It is to be remembered that women get better results for the reason that many are relieved of the strains incident to child-bearing and parturition.

Dr. L. F. Griffith, Assistant Superintendent of the Oregon State Hospital for thirty-six years, has participated in and observed the benefits of this work. He is enthusiastic about the much good that has been done in our hospital and is hopeful for its increased continuation.

The operation for sterilization in the male is a very simple one, very easily done under local anesthesia. The vas is located by palpation and brought next the skin of the upper portion of the scrotum. It is fixed in this position by two needles passed directly under it about half an inch apart. An incision is then made through the skin along the vas, which is thus exposed and freed from surrounding tissue. A ligature of chromic catgut is then placed upon the vas at the upper angle of the wound and the vas divided just below this ligature. The lower stump of the vas is then cut off without ligation, about one-half inch of it being removed; the skin is then closed by two catgut sutures.

For the female a general anesthetic is used. The abdomen is opened by a short incision in the median line immediately above the pubic bone. The tube and cornu of the uterus are brought into the wound and held there by an assistant, the tube being grasped at the isthmus by a forcep. The tube is severed within the cornu of the uterus by a small V-shaped incision and buried in this position. This is facilitated, if a suture is passed on each side and parallel to the tube where it enters the uterus and just far enough apart to allow for the V-shaped incision. Then the incision is made and the sutures tied, immediately closing the incision, controlling the bleeding and burying the proximal stump of the tube in the cornu. The operation is finished by stitching the distal end of the tube with its overlying peritoneum to the cornu in its original position. The other side is then treated in the same manner and the abdominal wound closed. The operation is simple and convalescence is prompt.

We have tried other details of technic, such as separating the layers of the broad ligament, removing a section of the tube and then suturing the ligament in such a manner as to bury the stump of the tube, but we have found the other technic simpler, and in our judgment surer securely to bury the proximal stump of the tube, which is the important part of the operation.

Nothing less than castration or complete unsexing will do the rapist any good. The same applies to the sexual pervert or the chronic masturbater. I hope that the time will soon be here when our courts will carry an order for these operations along with their prison sentences for certain definite crimes. What right has society to expect reform from a three-time loser? He is hopelessly and helplessly defective, only to go out at the end of his sentence to repeat and repeat his crimes.

FUSION OPERATION ON FOOT. Arthrodesis of one or more joints of the foot is useful in the correction of deformities and disabilities resulting from infantile paralysis, spastic paralysis, other neuromusclar diseases, congenital clubfoot, fractures and dislocations, Chopart's amputation, tuberculosis, and persistent weak foot. Fusion is most commonly done in the ankle and the subastragalar and midtarsal joints. When a lateral deformity of the foot occurs as a result of infantile paralysis, it has been found by years of experience that it is very difficult or impossible to muscle transplantations to restore balance of the foot so that the patient has effective control. The deformity may not be corrected, or it may relapse, or an opposite one may develop. A. Bruce Gill, Philadelphia (*Journal A.M.A.*, Nov. 26, 1927), emphasizes that the only reliable method of securing and maintaining correction is by fusion of the bones; in other words, by sketetal fixation. He discusses the indications and technic of subastragalar arthrodesis, and directs attention to the fact that while a subastragalar arthrodesis will prevent any recurrence of deformity in the subastragalar joint, unequal lateral muscles will produce a corresponding lateral deformity in the ankle joint where, under normal conditions, no lateral motion is possible. Gill corrects this deformity by splitting the astragalus horizontally on its shortened side, and driving in a bone wedge taken from the tibia. Thus, the two sides of the astragalus are restored to equal height or thickness, so that, when the foot is placed squarely beneath the tibia, the superior articular surface of the talus is in complete contact with the articular surface of the tibia, and the talus cannot twist around in the mortise made by the malleoli. The Davis, Hoke and Whitman operations are described and discussed. He believes that the Davis operation guarantees better fixation to correct lateral deformity; that, if unsuccessful, it does not make the foot worse than it was originally; that, if deformity persists or recurs after operation, a subastragalar section may be done again and again and the foot placed in the correct position, and that certain modifications which have been made to take advantage of all three means of correction of calcaneus make a satisfactory result almost certain.

CONJUGAL TUBERCULOSIS. Arnold Minnig, Denver (*Journal A. M. A.*, Nov. 19, 1927), has reviewed 6,000 dispensary cases with reference to the incidence of tuberculosis in husband and wife. There were 1,888 married or widowed patients. Among these, there were 319 cases, or 16.8 per cent, in which both consorts had active tuberculosis or one or the other died of the disease. Of the 319 patients, 104 were widowed on account of phthisis. Of the 104, or 48 per cent, who were so widowed, fifty consorts had developed active tuberculosis. Of this 319, 181 were female and 138 male. The reason for the predominant number of females being infected may be explained by the fact that the wife is usually the nurse when the husband becomes ill. In other words, when there was a massive infection as occurs when one of the consorts died, one out of two developed the disease. These observations show something definite; viz, in a large number of cases adult infection is present and a danger. While not every adult who is exposed to tuberculosis is going to be infected, yet if he or she is below par, and the consort has open tuberculosis, there is one chance in six that the other is going to become infected. Also if the culture medium is good and the infection is especially massive, as in the case of a dying consort, the chances are one in two that the other will become infected. It was rather striking that of these 319 patients with conjugal tuberculosis only eleven were born in Colorado, and of these only five died of the disease, a forcible argument in favor of climate. Another aspect was whether, when the woman developed tuberculosis, the man remained faithful to his wife, and when the man developed tuberculosis, whether the wife remained faithful to the husband. In the greater number of cases the man was more faithful to his wife than the wife was faithful to the husband. Hygienic living and intelligent prophylaxis have a marked and evident beneficial effect. Tuberculosis in the mother is the most dangerous contact, and is the more frequent in marital tuberculosis. Whether one believes in exogenous or endogenous infection or both, proper prophylactic precautions must be observed. That each bacillus is to be feared is uncalled for because of the very strong natural immunity existing in man.

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EDITORIAL

THE FREE CLINIC

Among the topics discussed at the recent annual Conference of Secretaries of State Medical Associations in Chicago, free clinics probably aroused the most interest among those in attendance. Dr. Jabez N. Jackson, president of the American Medical Association, in the course of his address to the secretaries, introduced the question and gave his personal views on the matter. He stated that, while the medical profession has at all times shown a continued, unselfish spirit in relation to its obligation for treating the sick poor, there has gradually been evolved a situation which unjustly calls upon the physician to devote gratuitous services to those well able to pay for them. Many hospitals now admit to their charity departments patients having every visible indication of self-supporting status or even of prosperity. Yet such institutions, although they exact a hospital or clinic fee from such patients, do not permit the attending physician to render a bill for his services. Dr. Jackson quoted the statement of a surgeon, practicing in a prominent metropolitan hospital, who told him that he was allowed to make a charge in only eight out of every one hundred operations he performed. This was in spite of the fact that many of the non-fee patients paid for private rooms during their stay in the hospital.

In the general discussion of free clinics which followed Dr. Jackson's remarks, several interesting facts were brought forth. It was generally agreed that there is an increasing abuse of free clinics, and that this is most marked in teaching centers. In some cities there is actual competition among medical schools to obtain patients for clinical demonstration. The establishment of pay clinics by medical schools is one evidence of this.

At the present time the determination of eligibility to free medical service in clinics is largely in the hands of lay boards and social service departments. In other words, the physicians have had little voice in the matter. Many of them hesitate to express their opinions on account of fear of losing staff appointments. Those in attendance at the conference were quite unanimous in a desire to have the organized medical profession, through its county, state and national medical associations, give serious consideration to the matter of free clinics. While the individual physician is helpless in combating such abuses when they exist in his community, the profession a· an authoritative group can do a great deal toward their proper control.

FACTS RELATIVE TO DIATHERMY

During recent years the employment of diathermy has become so well established as a therapeutic measure that many physicians are familiar with its use. There have been numerous queries as to the manner of heat production in the interior of the body and discussion as to the location of the greatest concentration of the heat. At first it was taught and believed by everyone that, if electrodes of equal size were placed on opposite sides of the body, the greatest concentration of heat would be found in the interior equidistant from the two electrodes. If one were smaller, the greatest heat concentration would be in its proximity. These statements have been questioned by various experimenters. Thus, Bettman and Crohn[1] determined by experimenting with white of egg and human and aninmal cadavers, that greatest heat was found on the surface beneath the electrodes, diminishing from this point inward and that there was no development of heat in the interior of the body.

More recently Christie and Binger[2] have conducted a series of experiments on anesthetized dogs, demonstrating that the conclusions of Bettman and Crohn were faulty and their technic was incorrect, since they did not take into account circulating blood and other factors present in the living animal. By the use of thermocouples on the skin, in the subcutaneous tissues, in the muscles and in the center of the lungs they ascertained temperatures under a variety of conditions. With diathermy electrodes on the sides of the shaved chest it was noted that the greatest heat was on the skin, decreasing through the above mentioned tissues till the lowest was found in the lungs, this, however, being higher than obtained by any other means. This heat gradient of the body reverses that under normal conditions, demonstrating that the heat from diathermy enters the body from without inward and does not appear primarily in the interior of the body as originally maintained. This inherent characteristic of diathermy is totally different from that of externally applied heat, as determined by surrounding the chest with a metal container of hot water, by which heat was transmitted to the skin and subcutaneous tissues with no elevation whatever in the lungs themselves. The conclusive experiment, proving that heat is produced in the internal organs by this high frequency current, was demonstrated by surrounding the chest with rubber ice caps containing a salt-ice mixture. The diathermy being applied, there was an increase of temperature in the lung in the face of greatly reduced temperature on the surface and immediately beneath it, which proves that the current passes through the interior of the body. These experiments seem to settle satisfactorily the controversy, proving that the diathermy current actually increases the temperature of internal organs.

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[1] Bettman, R. B. and Crohn, N. N.: Journ. A.M.A., 88, 532, 1927.

[2] Christie, R. V. and Binger, C.A.L.: An Experimental Study of Diathermy, Journ. Exp. Med., 46, 5, Nov., 1927.

THE CHRISTMAS SEAL SALE

The effective efforts exerted in all parts of the country for the relief and suppression of tuberculosis have become an established procedure among our national philanthropic endeavors. Through the agency of national, state and local tuberculosis organizations, we find in all sections of the country clinics, sanatoria, nursing services and educational programs, all of which excite the interest of the public in consequence of the splendid result which they have obtained. The funds to carry on these endeavors are secured by the annual sale of tuberculosis Christmas seals. These were originally introduced under the auspices of the American Red Cross Society which at present, however, has no interest in them, the enterprise being conducted by the National Tuberculosis Association under the immediate agency of the state organization.

The interest of the public in the purchase of these seals has been demonstrated in the past by the fact that the receipts from their sale has returned sufficient funds to meet the annual expenditures of the state and county associations. The consideration of the subject at this time is for the purpose of calling attention of the medical profession to their agency in promoting this worthy enterprise by emphasizing to their patients the part they may exercise in this universal attempt to control tuberculosis by the purchase of these Christmas seals. The method of sale does not follow the process of hounding individuals through a drive, but the exposure of seals for sale in public places during a period of a month is a constant reminder of the opportunity of assisting this great work.

A LOSS TO WASHINGTON

The Public Health League has become a vital factor in matters of public health in Washington. The success which the organization has accomplished during the past three years has been due largely to the ability and efficient endeavors of the executive secretary, Mr. Robert O. Jones. The discretion and foresight which he has exercised concerning legislative matters in Olympia have done much to bring about the results which have been so outstanding. His resignation, in order to assume an official capacity with the Gorgas Memorial Endowment Fund, will deprive the Washington league of his valuable services, much to the regret of everyone who has been connected with him in an official capacity. We wish him success in his new field of endeavor, while at the same time the memory of his accomplishments in Washington will be kept alive in the presence of the work which he has done for the benefit of the medical profession and public health matters of the state.

MEDICAL NOTES

PRIZE OFFERED FOR ESSAY. The next award for the Alvarenga Prize of the College of Physicians of Philadelphia will be made on July 14, 1928. This prize of $300.00 will be awarded for the best essay on any medical subject which is received by the Secretary of the College on or before May 1. The prize for 1927 has been awarded to Dr. Emil Bogen of Cincinnati, the subject of his essay being "Drunkenness."

CONFERENCE OF STATE SECRETARIES. The annual conference of secretaries of state medical associations and editors of association journals was held at the headquarters of the American Medical Association in Chicago Nov. 18-19. Simultaneous with this there occurred a meeting of the board of trustees of the national body. The secretaries' conference was devoted to discussion of problems affecting state medical associations. Pacific Northwest physicians in attendance included Dr. J. A. Pettit of Portland, Ore., a member of the board of trustees, and the following state secretaries: Dr. C. H. Thomson, Washington; Dr. F. H. Stricker, Oregon; Dr. J. N. Davis, Idaho. Northwest Medicine was represented by Dr. Harry C. Olmsted, Seattle, assistant to the editor.

OREGON

Pioneer Physician Honored. Nearly one hundred members of the Portland City and County Medical Society attended a banquet at Heathman Hotel Nov. 5 in honor of Dr. S. E. Josephi. Dr. Calvin S. White acted as toastmaster. The occasion marked the fiftieth anniversary of the graduation of Dr. Josephi from Cooper Medical College. He located in Portland soon after the completion of his medical studies and since that time has been prominently identified with its professional and civic activities. He was the first dean of the University of Oregon Medical School, serving from 1883 to 1911. He is now dean emeritus and professor emeritus of nervous and mental diseases at the school.

Hospitals Combined. The Mercy Hospital of Eugene, which was recently purchased by the International Bible Mission, will be operated jointly with the Pacific Christian hospital and will bear the name of the latter. The union of the two institutions increases the total bed capacity to one hundred sixty-two.

New Hospital Opened. The former residence of William Bagley at Hillsboro has recently been converted into a modern, forty-bed hospital. The alterations have been carried out under the direction of Dr. E. H. Smith. The new institution is to be incorporated and its privileges will be open to all accredited physicians of the district.

Private Hospital Opened. The Anderson Surgical hospital at Corvallis was formally opened to the public Nov. 13. The new institution, which is owned and operated by Dr. Harry J. Anderson, will accommodate thirty patients.

Campaign Against Fakes. During the past six weeks the Oregon State Board of Medical Examiners has waged an intensive campaign in Portland against illegal practitioners. Among the arrested and fined were K. T. Yamada, S. C. Gong and J. W. Thompson. Four others are now under arrest and their cases are pending trial.

Appointment to Health Post. Dr. Harold Averill has been appointed deputy city health officer of Portland in place of Dr. Max Simon, who recently resigned. Dr. Simon has gone to New York to engage in postgraduate study of diseases of the eye, ear, nose and throat.

Central Willamette Medical Society held a meeting at the Osborne hotel at Eugene Nov. 3. The principal address of the evening was made by Dr. P. A. Rohrer of the Virginia Mason clinic, Seattle, who spoke on the general subject of genitourinary infections.

Jackson County Medical Society met Nov. 2 at the home of Dr. Charles Haines in Ashland. Dr. Green of Medford talked on the subject of goiter. The recent typhoid fever epidemic at Medford was also discussed.

Dr. R. J. McCall, a graduate of the University of Chicago Medical School and for the past three years a member of the medical department of the Union Pacific Railway, has located for practice at La Grande.

Superintendent of Hospital. Dr. A. Okerstrom of Detroit, Mich., has been appointed superintendent of Columbia hospital at Astoria. He is an experienced hospital executive.

Dr. V. J. Carlson, formerly of Portland, has become associated in practice with Dr. P. L. Poulsen at Forest Grove.

Dr. R. N. Erwin has resumed practice at Hillsboro, after an absence of several years.

Dr. A. J. Fawcett, who has practiced for the past year at Independence, has moved to Amity.

Medical Wedding. Dr. R. W. Hausler and Miss Jean Speier were married at Portland Oct. 26.

WASHINGTON

School Health Supervision Inadequate. A recent investigation by a committee of the Seattle Federation of Women's Clubs has disclosed the fact that periodic health inspection of children in the schools in King County, which are outside of the Seattle district, is totally inadequate. They allege that, although the funds allotted to former county health officer H. T. Sparling were insufficient for proper carrying on of the work, the staff of his successor, Dr. C. L. Dixon, has been reduced still further. It is claimed that in many of the rural schools, visits by a county nurse can only be made once or twice a year. Dr. Ira C. Brown, medical investigator of the Seattle School District, has stated that many of the children transferring from the county to the city schools have physical defects which have retarded their mental progress.

A Corporation Cannot Practice Medicine. A test case, involving the right of a corporation to practice medicine through a licensed or nonlicensed employee, was tried recently in the Seattle courts at the instigation of the Washington Public Health League. Justice of the Peace Chester A. Batchelor fined H. D. Curtis $100 and costs for practicing medicine without a license. Curtis, although not a physician, has been employed as Seattle representative of Charles J. Dean, M.D., Inc., a Portland corporation of alleged rectal specialists.

Improve Yakima Water Supply. Following the installation of a chlorinating equipment, the city water of Yakima has again been declared fit for drinking purposes. Dr. Henry Storgaard several weeks ago placed a ban upon consumption of unboiled water, following the discovery that the municipal supply was contaminated by bacteria.

College to Receive Gift of Hospital. Students of Washington State College are to have a modern thirty-five bed hospital as the result of the generosity of the late John A. Finch of Spokane. The trustees of the Finch estate have voted $40,000 for this purpose. Student fees will add an additional $35,000, thus making possible the completion of the new institution by the beginning of the next school year. This private bequest is the first of substantial size to be donated to the state college.

Dedicate Chehalis Hospital. The Right Reverend Bishop O'Dea of Seattle made the principal address at the dedication, Oct. 30, of the new addition to St. Helens Hospital, Chehalis. The building was erected at a cost of over $100,000. It is constructed of brick and is entirely fireproof. The total capacity of the hospital will now be increased by thirty-five beds. Chehalis physicians have organized a staff for the enlarged institution, the board managers to consist of Drs. Harry Feagles, J. H. Manning, Angus E. MacMillan and H. L. Petit.

Library Donated to Hospital. Mrs. Arthur Clarke Johnson of Spokane has given to St. Luke's hospital the valuable medical library which belonged to her husband. Dr. Johnson was accidentally killed by an automobile while attending the American College of Surgeons meeting at Detroit last October. The trusetes and staff of the hospital will maintain the library and keep it up to date by purchase of new books and journals.

New Hospital Planned. Articles of incorporation have been filed for the construction of a $100,000 hospital at Vancouver, to be known as the Clark County hospital. It will have a capacity of approximately fifty beds.

Illegal Practitioner Arrested. Elmer G. Williams of Bellingham was recently arrested by S. G. McGuire of the state license department on charges of unlawful use of the term "doctor" and violation of the chiropractic act.

New Officers Elected. The annual dinner meeting of the staff of St. Elizabeth's Hospital, Yakima, was held in the hospital Monday, Nov. 14, for the purpose of electing officers for the ensuing year. The following were elected to office: President, Dr. A. J. Helton; vice-president, Dr. D. F. Bice; secretary, Dr. J. L. McDonald; executive committee, Drs. E. S. West, W. L. McClure, G. W. Cornett, M. L. Maguire, C. R. Duncon and S. J. Rowland. Record committee, Drs. J. F. Scott, H. H. Skinner and W. M. Brown.

Walla Walla County Medical Society, at its meeting at Walla Walla Nov. 10, elected the following officers for the ensuing year: President, Dr. E. J. Rhoades; vice-president, Dr. T. J. Rooks; secretary, Dr. A. E. Lange; treasurer, Dr. J. E. Vanderpool. The society determined to hold a number of public meetings during the course of the winter for the benefit of the laity.

Dr. Frederick Epplen of Spokane has moved to Seattle, where he will engage in the practice of internal medicine in association with Drs. E. P. Fick and C. E. Watts.

Snohomish County Medical Society met in the library of the Medical and Dental Building at Everett Nov. 1. Election of new officers for 1927-28 resulted as follows: President, Dr. H. T. Rhodes, Everett; vice-president, Dr. A. C. Leslie, Index; secretary, Dr. W. J. Bell, Everett; treasurer, Dr. L. G. Woodford, Everett; delegate to state association, Dr. W. F. West, Everett. A moving picture film, entitled "Preparation of Biologicals," was shown by courtesy of Parke, Davis Company of Detroit.

Klickitat-Skamania County Medical Society, at its October meeting at White Salmon, was addressed by Dr. Ben Wade of Portland, who spoke on "The Acute Surgical Abdomen." A symposium on "Obstetrical Procedures" was participated in by all of the members of the society in attendance. The scientific program followed a banquet at the Colburn Hotel.

Dr. A. G. Tullar, who has been engaged in practice at Kennewick for the past ten years, has moved to Los Angeles. He will be succeeded by Dr. George H. Rue, formerly of Costalgia, Calif.

Medical Wedding. Dr. L. D. Long and Miss Marion Campbell, both of Seattle, were married at the home of the bride's parents October 12.

IDAHO

Poliomyelitis Menaces Boise. Following the discovery of one definite and several suspected cases of infantile paralysis in Boise, a committee of local physicians recommended to the school board that, in order to avert an epidemic, children in the lower grades be dismissed from school. Acting upon the advice of the physicians, Mr. Charles F. Dienst, superintendent of Boise schools, ordered the closure of all classes up to and including the sixth grade.

Dr. R. A. Lower, who has been engaged in practice at Harrison during the past year, has moved to Priest River, where he will act as resident physician in association with Dr. Bardwell of Newport, Wash., and Dr. Page of Sandpoint.

OBITUARIES

Dr. John Nywening of Yakima, Wash., died Nov. 15, age 52 years. He was born in Chicago, Ill., in 1875, and graduated from St. Louis University School of Medicine in 1904. He was at one time superintendent of an insane asylum at Kalamazoo, Mich. Later he came West and served as head of an Indian school at Salem, Ore. He had been in practice at Yakima since 1906, where he gained a reputation in psychiatry. He served as state and county health officer of Yakima county from 1909 to 1911.

Dr. August Kinney, Astoria, Ore., was drowned in the Columbia river on or about Nov. 1. He had disappeared from his home a few days previously. He was born at Salem, Ore., in 1883, and graduated from the University of Oregon Medical School in 1907. He then located at Astoria, where he was associated in practice with his father, Dr. Alfred Kinney. A brother, Dr. Albert W. Kinney of Seaview, Wash., also survives him.

Dr. Homer J. Birney, Ferndale, Wash., died suddenly of heart disease at his home Nov. 9, aged 72 years. He was born at Cadiz, Ohio, in 1855 and graduated from Rush Medical College, Chicago, in 1882. After practicing several years in Heyworth, Ill., he located in Bellingham in 1890 and remained there until 1917 when he moved to Ferndale. He was one of the pioneer physicians of Whatcom county and was credited with having performed the first cesarian operation in that locality. For two terms he served as president of the Whatcom County Medical Society.

CORRESPONDENCE

MORPHINE ADDICT IMPOSTER

Seattle, Wash.,
Nov. 10, 1927.

To the Editor:

There is a man who in my opinion is a narcotic addict travelling around consulting the various doctors of the Northwest, especially the urologists.

He has a very plausible story. He always states that he has a right sided colic which is very severe. Frequently he goes through a typical spell in the office that would fool most any one. He usually says he is in a tremendous hurry, that he cannot be submitted to a renal study, that he is leaving town and wants enough morphine to relieve his pain until he gets to his next station. He puts on such a wonderful picture of renal colic that he usually gets by with his story. He has called on doctors in Portland, Seattle and Bellingham to my knowledge.

He is about 36 years of age, height 5 feet 11 inches, weight 130 pounds. He goes under the name of Greer, James Murphy, Shirley and probably has a number of other aliases.

I think the doctors should be warned about him.

Yours truly,
A. H. PEACOCK.

PUBLIC HEALTH LEAGUES

WASHINGTON

MEDICAL PRACTICE BY CULTISTS

Cult opposition to legal health barriers has received many set-backs, according to an announcement from the office of the Public Health League. Many important decisions have been handed down in the past year. The rights of an osteopath to carry on an advertising campaign have been clearly determined in a recent decision from the supreme court. This decision was the result of the appeal perfected by Dr. A. M. Loughney of Seattle, who for some time has advertised his healing wares in connection with the treatment of asthma and hay fever. He was cited by the department of licenses to appear under a proceeding looking toward a possible revocation of his license, which was followed by an injunction plea by the doctor. He lost in all courts, and that part of the osteopathic act restricting advertising was upheld.

Judge Chester Batchelor of Seattle gave corporate medical practice a real jolt recently when he presided over the trial of a layman in the Dr. Dean rectal parlor case. Here was a layman alleged to be practicing medicine and surgery. He was found guilty by Batchelor and fined $100. The judge held in this decision that the practice of medicine was a personal matter and could not be delegated by incorporation methods.

In the well-known Cotton case, which was carried to the higher court, the power of a health department to require quarantine observance by a sanipractor was firmly established. Cotton is a Seattle drugless healer and claimed immunity from this type of health observance; was taken into the courts and carried his case to the supreme court.

These are typical of cases which have been brought in the courts which have tended to clarify and to establish clearly the legal aspects of medical and public health practice.

GOES TO GORGAS MEMORIAL

Executive Secretary Robert O. Jones, for five years with the Washington League, has tendered his resignation to accept a position as publicity manager for the Gorgas Memorial. He will assume his new duties in December and will be connected with the Gorgas headquarters in Chicago.

Mr. Jones came to the Washington post in January, 1923, having just completed a second term as Secretary of State of Idaho. He had also served as Commissioner of Law Enforcement of that state and was in charge of the enforcement of statutes dealing with the professions.

The work of the League has shown great expansion during his term. Provision was made for dental, nursing and pharmacy participation, and a strong lay bureau was established. The publication of thousands of health bulletins and a health campaign through talks before luncheon clubs and other such organizations has featured the progress of the League.

Outstanding achievements in health legislation are shown in the passage of the basic science bill, which was signed at the last session, and the passage of a measure to provide machinery for the revocation of "diploma mill" licenses. Many measures designed to cripple medical standards in the state and to break down the public health system were defeated.

"I have enjoyed my work with the Washington League immensely," Mr. Jones stated in filing his resignation. "This is a great organization and its work for public health has been tremendous. It has gone forward in constructive effort through the vision and high ideals of the medical profession. It has well served the public in its health program."

"However," he said, "I appreciate the opportunity of becoming identified with the Gorgas Memorial Institute. It is a national health institution with a vital program reaching every community in the country. With a platform that stresses the need of the periodic health examination and favors a strong health educational plan, the Memorial is well prepared to build a living, serviceable monument to the late General Gorgas and his medical achievements.

REPORTS OF SOCIETY MEETINGS

OREGON STATE MEDICAL SOCIETY

MINUTES OF THE FIFTY-THIRD ANNUAL MEETING OF OREGON STATE MEDICAL SOCIETY, HELD AT CHAMBER OF COMMERCE, SALEM, ORE., SEPTEMBER 1-3, 1927.

HOUSE OF DELEGATES

FIRST SESSION

Thursday, Sept. 1

The opening session of the House of Delegates of Oregon State Medical Society was called to order by the President, W. B. Morse, at 12 M. in the Lounging Room of the Salem Chamber of Commerce.

The Secretary called the roll of officers, councilors, and delegates.

The following officers and councilors were present: W. B. Morse, Hugh S. Mount, L. B. Bouvy, John W. Sifton, A. B. Peacock, Frederick D. Stricker, J. Earl Else, Joseph A. Pettit, William Kuykendall, E. B. McDaniel, Charles E. Sears, C. L. Booth, H. J. Clements, Wilson Johnston, and the executive secretary.

The following officers and councilors were absent: Frank Mount and C. J. Smith.

The following delegates were seated:

Dr. George Vandevert of Bend as delegate from the Central Oregon Society by vote of the House, in the absence of Dr. Paul Woerner, of Bend, regular delegate and Dr. Roy W. Hendershott of Bend, alternate delegate.

Dr. E. C. Joseph of Corvallis and Dr. J. H. Robnett of Albany, as delegates from the Central Willamette Society, the latter by vote of the House, as the Central Willamette Society had elected only one delegate.

Dr. R. J. Pilkington of Astoria as delegate from the Clatsop County Society.

Dr. Robert J. Dixon of Marshfield as delegate from the Coos and Curry County Society.

Dr. J. G. Gregory of Wallowa as delegate from the Eastern Oregon Society by vote of the House, in the absence of Dr. C. J. Bartlett of Baker, regular delegate and William T. Phy, alternate delegate.

Dr. E. B. Pickel of Medford as delegate from the Jackson County Society by vote of the House, in the absence of Dr. J. C. Hayes of Medford, regular delegate, and Dr. Gordon MacCracken of Ashland, alternate delegate.

Dr. L. L. Truax of Klamath Falls as delegate from the Klamath and Lake County Society.

Drs. L. S. Kent and G. I. Hurley of Eugene as delegates from the Lane County Society, the latter by vote of the House as the Lane County Society had elected only one delegate.

Dr. John W. Sifton of Hood River as delegate from the Mid-Columbia Society by vote of the House, in the absence of Dr. Marcus Thrane of Hood River, regular delegate.

Dr. L. O. Clement and Dr. C. A. Downs of Salem as delegates from the Polk-Yamhill-Marion Society, the latter by vote of the House, due to the voluntary withdrawal of Dr. H. J. Clements of Salem, regular delegate.

Drs. Otis B. Wight, Louis P. Gambee, C. H. Manlove, Harold C. Bean, Frank E. Boyden, T. Homer Coffen, A. G. Bettman, C. J. McCusker, Otis F. Akin, and J. H. Fitzgibbon of Portland, as delegates from the Portland City and County Society, the last-named by vote of the House, in the absence of Dr. R. H. Wellington of Portland, regular delegate.

The following regular delegates from the Portland City and County Society were absent and as no other members of this society were available, their seats were left unfilled: Lyle B. Kingery, Fred Ziegler, and L. Howard Smith.

Dr. F. G. Swedenburg of Ashland as delegate from the Southern Oregon Society by vote of the House, in the absence of Dr. Ralph W. Stearns of Grants Pass, regular delegate, and Dr. Gordon MacCracken of Ashland, alternate delegate.

Dr. David Robinson as delegate from the Tillamook County Society.

On motion duly made and seconded, it was voted to dispense with the reading of the minutes of the last meeting, the minutes having been printed in Northwest Medicine.

Report of the President as Chairman of the Council

Dr. W. B. Morse, as chairman of the Council, made the following report:

The work of the Society during the past year has been entirely satisfactory to me. It has been marked by peace and harmony, cooperation, and an apparent purpose on the part of all the officers and councilors to carry on the work in the interim with the sole idea of advancing the interests of the Society.

We have had record meetings. At one meeting I think we had twenty-eight men present, there being a response from every man who was notified that we were to have a Council meeting and that it was his place to be there. Those who have attended meetings of this kind previously have told me that our Council and committee meetings during the past year were practically all record-breakers.

We have done everything that we knew how to do as officers, councilors, and committeemen to promote the interests of the Society. There has not been at any of these meetings a single note of discord of any sort. We have had arguments, sharp discussions, all of which are helpful and good, but never a real note of discord at any time.

As you all know, I was elected President on a sort of compromise platform. That has been my attitude for the whole year. It is going to continue to be my attitude as long as I preside, to be impartial, to be a servant of the Society, and not a dictator. My whole purpose is that this body and the Society in general shall do exactly what the majority wants it to do, and that is all I am interested in. I hope that will prevail, and so far as I am at all able that will be my purpose.

I think this is a good time perhaps to thank the

Society for allowing me to act as President for a year. I appreciate the honor. I feel that it is one of the highest that can be paid to any doctor who is a member of this Society, and I appreciate it very, very much. My only regret is that I have not been able to serve you better and to help the Society to accomplish more.

Report of the Secretary

Dr. Frederick D. Stricker, Secretary, reported as follows:

As your secretary, it is my duty to make an annual report. The business of the Society has increased to such an extent that an executive secretary is necessary to properly care for the work. In order to avoid duplication, the details of the year's work will be included in his report. There are, however, certain facts to which I would like to have the Society give special consideration.

The Oregon State Medical Society was formed at Portland in 1874 by medical pioneers from various parts of the state who met because they believed it was essential that medical men should bind themselves together to promote the usefulness, honor and integrity of the medical profession. The purpose of the organization was to cultivate and advance medical knowledge, to enlighten and direct public opinion in regard to the scope of the scientific practice of medicine, and to facilitate and foster a friendly feeling among those engaged in the practice of medicine.

The Oregon State Medical Society has seven compoenent county societies and five district societies. The county society should be the basic unit. The county societies compose the State Medical Society, as do likewise the state societies of the country compose the American Medical Association. The county societies are chartered by the State Society. Membership in the county society automatically makes the physician a member of the Oregon State Medical Society also.

The present membership of the Oregon State Medical Society is 553 members. There has been a steady increase in membership annually for several years. We hope ultimately to have within our organization every ethical and eligible physician in the state.

The House of Delegates is composed of members of each component society, the societies being entitled to one delegate for every twenty-five members. The House of Delegates is the legislative body of the State Society and meetings are held annually during the annual meeting of the Society.

The Council is composed of nine members from nine Councilor districts and the work of the Council is similar to that of a Board of Trustees. Meetings are held monthly during the year to transact the business of the Society between annual meetings.

The official organ of the Society is NORTHWEST MEDICINE which is a monthly publication and is given free to each member.

One of the major activities of the last two years has been the promotion of periodic health examinations. It is a generally recognized fact that the earlier a diseased condition is detected, the better the chance for recovery, or at least improvement. Still better, if the condition could be prevented before it actually begins, it would give the maximum result. It is undoubtedly as significant for the average business or professional man to have a health inventory as a financial inventory and no one will question the advisability of the latter.

Man's greatest asset is health and he should endeavor to retain it as he does his other assets. This applies particularly to the man who is reaching middle age, when his waist line begins to increase and he tires easily on exertion. During the past year or two postgraduate courses on the technic of making periodic health examinations have been conducted under the auspices of the Society. There is no question but that regular physical examinations will lessen the mortality of every disease.

The Oregon State Medical Society must be built up by increasing the number of county medical societies. During the past year every county and district society has been visited. Steps have been taken to institute societies in a number of counties. The first and most fundamental essential to the success of a county medical society is regular meetings. No county society should meet less frequently than once each month and many can and should meet oftener. Among the numerous and great advantages that will be reaped by frequent meetings one is worthy of special mention, namely, they will cure any real and imaginary defects in the morals and harmony of the Society. Any lack of courage as to what the society can accomplish or of cordiality that may exist between members will soon vanish under frequent face-to-face meetings that not only inspire confidence, but afford each member an opportunity of learning that there is much more good in the other than less intimate acquaintanceship revealed.

Each meeting should have something worthwhile, either scientific, preventive or social. That this can be done does not admit of a doubt. To bring about the largest results—scientific, preventive, and social—demands full meetings of county medical societies.

Much difference as to attendance frequently exists, some members being punctual and regular, while others are rarely present. Many members who are doing large and laborious practices often attend the county medical society meetings regularly, while others who are not nearly as busy are seldom present.

The county society should from time to time hold public meetings. In order to get the support of the people, education on preventive medicine must be carried into the homes. The State Society can and is preparing to make available a course of lectures by the best medical minds in the state.

The foundation of success in all modern fields of endeavor depends upon a unity of purpose. It is confidence in the belief that a certain plan will succeed that makes big things possible. If unity is the foundation of success in other fields, it must also be essential to the successful practice of medicine.

The Oregon State Medical Society needs the cooperation of every ethical physician in this state. Their cooperative efforts are essential, if our profession is to win the community the respect and consideration the practice of medicine deserves; but first individual cooperation is the most important, for without it neither can be obtained. This means that each of us engaged in the practice of medicine is to make minor individual sacrifices for the good of the many. We all have personal prejudices. Some are real but many are probably imaginary, and we must be cautious lest this prejudice warp our judgment when we are considering vital questions.

Disease is amenable to scientific study and treatment. The old family doctor made up his mind on the basis of symptoms and obvious physical indications. But the common neglect of hygienic precautions has wrought untold damages. Inability to penetrate the surface often forces the old practitioner to fumble.

The modern physician in his office now commands services which were beyond the reach of the most advanced investigation a dozen years ago. As time goes on means must be provided to keep the physician informed on the more intelligent methods of diagnosis and treatment that are being involved.

Medical education must include the men actively engaged in the practice of medicine as well as the students. They must be taught to analyze the simplest situation which the ailing body presents. Observation, sorting out, combining, inferring and trying must be in constant operation both in the diagnosis and treatment of disease.

The physicians of the state should be presented with the latest scientific services. Lectures should be made available to the county societies. Courses of instruction in clinical fields could be arranged in Portland, where there is material that the profession could and should use. The entire practice of medicine and the various specialties should be carefully gone over by men best fitted to select subjects in each branch.

Members from all parts of Oregon who are best fitted to lecture on any subject should be card indexed and made available to call. The object is to furnish speakers and clinicians to county medical societies whenever they request their service. In this way you would be having a postgraduate course in the community.

The Oregon State Medical Society is endeavoring to bring into one compact organization the medical profession of the state, attempting in every way to extend medical education, advance medical science, and enlighten the public in regard to health matters so that the people of Oregon can get that high type of medical care which is essential to the advancement of medical science.

Report of the Executive Secretary

Clye C. Foley, executive secretary, made his report as follows:

I have the honor to submit the following report for the year 1926-1927:

Membership. There has been a gradual but steady increase in the membership of the society during the past several years as indicated by the following table:

Year	Number of Members
1923	430
1925	468
1926	522
1927	553

These figures show that the membership has grown 29 per cent since 1923 and is enjoying a regular growth each year of some 7 per cent.

The present membership of the various component societies is shown in the following table:

Component Society	Number of Members
Central Oregon	12
Central Willamette	8
Clatsop	10
Coos and Curry	18
Eastern Oregon	27
Jackson	11
Klamath and Lake	18
Lane	30
Mid-Columbia	14
Polk-Yamhill-Marion	40
Southern Oregon	8
Tillamook	6
Portland City and County	351
Total	553

Council Meetings. During the period from April, 1926, to September, 1927, the Council has met twelve times and conducted the necessary business of the society. The chief actions of the Council are included in the following summary:

1. Authorization of lecture courses in periodic health examinations.
2. Approval of the report of the State Industrial Affairs Committee to the Workmen's Compensation Committee of the 1927 legislature.
3. Expression of displeasure to the American Public Health Association at the latter's attempt to replace physicians as health officers with laymen with D. P. H. degrees.
4. Authorization to the Secretary and Treasurer to invest $5,000 of surplus funds in bonds.
5. Authorization to assist in preparing *Hygeia* exhibit at annual session of Oregon State Teachers' Association.
6. Authorization to the Secretary to print bulletin in name of state society, expense to be defrayed by sale of advertising space.
7. Authorization to the Secretary to rent Elsinore Theater for a public meeting and a suite of rooms at Hotel Marion for guests of society at annual meeting at Salem.
8. Approval of the recommendation of the A. M. A. Council on Medical Education and Hospitals that medical ethics be made required part of medical school curricula and that various medical organizations assist in disseminating information among their members.
9. Authorization to the Secretary to invite American Medical Association to meet in Portland in 1928.
10. Authorized preparation of revision of consti-

tution and by-laws for consideration of constituent societies and House of Delegates.

Promotion of Periodic Health Examinations. A great deal of effort has been spent in promoting periodic health examinations among the members of the society. Several hundred A. M. A. manuals and examination blanks have been distributed and many members are doing considerable examination work.

Four series of lectures have been given in Portland which have been attended by a considerable number of physicians from Portland and surrounding counties. An attempt was made to conduct a correspondence course in periodic health examinations but difficulty was met in having the speakers write out their lectures. Nevertheless, some ten lectures have been mimeographed and are available to members desiring them.

A new examination blank has been drawn up and is now available and a manual of instruction is being prepared. As soon as sufficient material is available the present plan is to conduct a correspondence course which will reach members throughout the state. About one hundred and fifty physicians in different parts of the state have participated in the periodic health examination work either by attendance at the lecture courses or through studying the mimeographed lectures.

Medical Directory. The first issue of the Oregon Medical Bluebook, a directory and handbook of information on medical practice in Oregon is now in press. Publication has been delayed because of the necessity of securing a large amount of advertising to defray the expenses of publication. The expense of printing the programs for the annual session will also be paid from funds raised from directory advertising.

Malpractice Suits. An attempt has been made to systematize the office routine of handling applications for defense against malpractice suits and the records of suits handled. There has been no regular method of recording data on the causes and incidence of suits and indemnity paid. As a result the society has not been able to deal as effectively with the insurance companies as it otherwise might.

Investigation of the number of members carrying indemnity insurance was made and it was found that approximately 90 per cent of the members carry such insurance in addition to the medical defense provided by the society. The Council now has under consideration a plan, whereby both defense and indemnity can be provided at a reduced rate through one of the standard liability companies.

State Industrial Accident Work. The Workmen's Compensation Act has been the subject of attack by private insurance companies for many years. A particularly strong assault was made on the law at the last session of the legislature with a view to placing the private companies on a parity with the State Industrial Accident Commission. The society has worked with the commission to maintain the present law because of the protection it affords the worker and because the fees and conditions under which the physician does industrial work appear to be better than under the private insurance companies.

One of the hospital associations proposed drastic amendments to the hospital association law and the Workmen's Compensation Act which would have placed the individual physician at a serious disadvantage in securing industrial accident work. This proposal was defeated.

We now have under way a study of the fee schedules for industrial accident work in the states of California, Utah, Idaho, Washington, and Oregon with a view to asking for such increases in the Oregon schedule as seem justifiable.

Study of Unlicensed Healers. The Portland City Club has authorized a study of unlicensed healers in Portland with the executive secretary of the society as chairman of the committee. Preliminary work on this study is already begun. It is anticipated that this study will be very useful as a background for securing a basic science act at the 1929 session of the legislature.

Attacks on Quackery. Several outstanding pieces of quackery were attacked by the society during the year. The society's effort to suppress the advertising of Wilshire's "Ionaco"' was only partially successful, due to the powerful influences behind this contraption, and the absence of information to refute the ridiculous claims of its promoter.

The other outstanding piece of quackery encouraged during the year was Kirkpatrick's "Pul-Bro-Tu," an alleged remedy for tuberculosis. A great deal of publicity was given this alleged cure by the Portland Oregonian. The society responded by publishing the A. M. A. laboratory analysis, together with a statement showing the futility of depending upon the ingredients of this so-called remedy for a cure of tuberculosis.

A close watch is kept on all newspapers throughout the state, and all advertisements and news items dealing with patent medicines or suspected quackery are clipped and filed. Some of these clippings are made the basis for requests to the State Board of Medical Examiners for investigation. Other clippings are used as a basis for protest and information to the newspapers carrying the items.

A card index of the material which has appeared in the "Propaganda for Reform" column of the A. M. A. journal since the publication of the two volumes on "Nostrums and Quackery" has been begun. In this way we will have available an up-to-date record of most of the quackery in the country.

The establishment of a full-time society office has greatly stimulated the number of requests for information on health problems and quackery. During 1926, 138 letters were written to various lay individuals and organizations in response to inquiries. In the first eight months of 1927 alone, 166 such inquiries were received.

The society office is now well organized and is running smoothly. A great deal of pioneering and organization work has been done. The society is, therefore, in a position to produce substantial results during the coming year.

Report of the Treasurer

Dr. J. Earl Else, Treasurer, reported the finances of the society as follows:

Statement of Receipts and Disbursements
General Fund
From March 1, 1926 to September 1, 1927

Balance on hand March 1, 1926		$ 2,309.89

RECEIPTS

Dues collected:		
State Society dues	$12,832.50	
Portland City and County Society	1,848.75	
Mid-Columbia Society	15.00	
Eastern Oregon Society	10.00	
Southern Oregon Society	4.00	
Polk-Yamhill-Marion Society	1.00	
	$14,711.25	
Other income:		
Interest earned on General Fund Bonds	363.75	
Total income		$15,075.00
Total receipts and balance		$17,384.89

DISBURSEMENTS

Turnover:		
Oregon Public Health League (prorata dues)	$ 6,220.00	
Medical Defense Fund (prorata dues)	1,702.50	
	$ 7,922.50	
Refunded dues:		
Portland City and County Society	1,848.75	
Mid-Columbia Society	15.00	
Eastern Oregon Society	10.00	
Southern Oregon Society	4.00	
Polk-Yamhill-Marion Society	1.00	
State dues of Dr. E. C. Dalton	20.00	
	$ 1,898.75	
Operating expense:		
Office rent	$ 256.50	
Salaries	50.00	
Telegraph and telephone	117.43	
Printing and multigraphing	434.85	
Postage	354.21	
Miscellaneous expense	275.01	
Bank charges	2.60	
Office supplies	114.49	
Annual Meeting 1926	234.47	
Northwest Medicine	1,654.00	
	$ 3,493.56	
Investments:		
Bonds	$ 2,495.80	
Total disbursements		$15,810.61
Balance on hand September 1, 1927		$ 1,574.28

MEDICAL DEFENSE FUND

Balance on hand March 1, 1927		$ 1,710.52
Receipts:		
Prorata dues from Society	$ 1,702.50	
Interest earned on Bonds	595.72	
	$ 2,298.22	2,298.22
Total receipts		$ 4,008.74
Disbursements:		
Medical Defense expense	$ 319.15	
Cost of Bonds	2,495.81	
Telegrams—expense	1.08	
	$2 816.04	
Total disbursements		$2 816.04
Balance Medical Defense Fund September 1, 1927		$ 1,192.70

During the past year we have invested $2,500.00 in bonds from each of the General and the Defense Funds. These items appear here as $5,000.00 under expenditures. We now have $17,000.00 invested in bonds.

If I may be permitted at this time, I would like to make a statement relative to this, because whenever we make any statement as to money on hand or bonds that we have, there are always some who begin to think about how that money might be used. In the state of Ohio they have established a foundation. The purpose of that foundation is to accumulate a working capital so that the interest on it may be used to defray the expenses of certain things that they may want to undertake that they could not assume if they had to depend entirely upon dues.

Another matter is that of defense. If we had a working capital of, I think approximately fifty thousand dollars (I speak of that figure because that was the statement made to me by Dr. Epplen, of Spokane, who has investigated the matter), we could take care of malpractice insurance ourselves at an expense of about $10.00 per year, or one-half the amount which we are paying at the present time. Therefore, I don't think we should touch this reserve fund or do anything to affect our income, in order that we may increase our reserve until we get to the point where we can take care of malpractice insurance ourselves. Then, also, when we get other money ahead, there are other things we might do.

Therefore, in making this report, while we are reporting a considerable sum in bonds, let us keep it intact. Let us not interefere with the income until the time may come when we can handle these functions with a great deal more satisfaction than we are handling them today.

Reports of the Councilors

Dr. Charles E. Sears (First District): I haven't any special report to make.

Dr. C. L. Booth (First District): I haven't much of a report to make, except to say that the Portland City and County Society is in a healthy condition, having regular meetings and functioning in its field of usefulness. We have very recently suffered, as you all know, the death of our president, Dr. S. M. Strohecker. His death is a great loss to the medical profession of the city of Portland.

I believe I may say that not for a long time has there existed among the medical profession of Portland the feeling of harmony that exists at the present time. There is less squabbling and fighting and that sort of thing than there has been in my recollection for a long time. I think everything is fairly satisfactory in my district.

Dr. Frank Mount (Second District): Absent.

Dr. H. J. Clements (Third District): I overlooked the fact that a report was due so I have not prepared a written statement. I was elected by the Council in the middle of the year to replace Dr. E. E. Fisher of Salem who was also president of our local society at the time of his death.

The Polk-Yamhill-Marion Society has a live membership in the neighborhood of forty physicians. Most of the doctors in Marion and Polk counties are members of the society. Heretofore Yamhill county has had only a very scanty representation but at the present time we have a goodly number from that county also.

There has been harmony in the society throughout the year and our meetings have been quite well attended. The plan of the program committee is to have one physician from outside the society and one local man on each monthly program. We have been favored with the presence of a considerable number of specialists from Portland and elsewhere and our local members have in every case responded with their part of the program. All in all our society is in a good all-around condition.

Dr. William Kuykendall (Fourth District): I have prepared no written report. There are only three societies in my district. They are all functioning properly, having their regular meetings and doing very good work, better, I believe, than they have ever done heretofore. This includes the Central Willamette, Lane, and the Coos and Curry societies. I have not personally visited the boys over in Coos county, much to my loss, perhaps to their gain, but I have kept in touch with them. They are doing more harmonious work and are in better condition, I believe, than they have ever been before. On the whole the work of the district is going on in good shape.

Dr. C. J. Smith (Fifth District): Absent.

Dr. Wilson Johnston (Sixth District): I have nothing special to report. I have no personal knowledge of conditions in my district but from information received from the various societies they seem to be flourishing, in spite of the fact that they have a very poor councilor.

Dr. E. B. McDaniel (Seventh District): I have no written report, but as far as I can find out everything is going on in very good shape. They are all functioning as well as can be expected under the conditions.

Dr. L. B. Bouvy (Eighth District): The Eastern Oregon District Society is functioning very well. We have just had a very successful meeting which at the last minute I was unable to attend.

I obtained a list of all the eligible men in the district and wrote a letter to each individual who was not a member of the society. I have heard from several of them and have some promises of new members. I think our society is functioning very well.

Report of Delegate to the American Medical Association

Dr. Wm. Kuykendall, Delegate to the American Medical Association, reported as follows:

As your delegate to the American Medical Association for the term just closing it would seem to be fitting to make a report for the two sessions I have attended.

I attended the 1926 session at Dallas, Texas. While I made a verbal report to the Council, I will make a brief formal report to you at this time.

The Dallas session was notably pleasant and harmonious. In a social and entertainment way it was exceptionally fine. Dallas was large enough to successfully entertain the American Medical Association but is small enough so that the coming of the association was a great and notable event. So they concentrated all their energies upon showing us a good time.

The work of the House of Delegates was handled smoothly and expeditiously. Things ran like a well oiled machine. In fact, the suggestion of a well oiled machine was at times even a little too obtrusive. However, some degree of method and machinery is necessary in handling any great public gathering and I saw but little sign of any offensive machine methods at either session, such as our western men used to complain of.

Politically, Oregon fared well. Our own Dr. Joseph Pettit was elected a member of the Board of Trustees over no less illustrious a competitor than Dr. Ray Lyman Wilbur, president of Leland Stanford University. The contest, however, developed into a real "hoss race," the winning vote being the last one cast. There was nothing about the proceedings otherwise that need be noted at this late day.

The Washington session was notable in many ways. Socially, it was naturally a high class affair. The presence of the President of the United States and his most gracious and amiable wife was an event of itself. President Coolidge's address on the achievements of medicine at the opening session has, it seems to me, not received the commendation from the profession which it really deserves. The high note of praise for the service of the profession, coming from the source it did, will carry great weight. It was the strongest statement of facts, coming from a nonprofessional source, that I have heard.

The meetings of the House of Delegate were uniformly harmonious and only one subject of a controversial nature was introduced and that was the perennial one of the dry law regulations as to prescriptions of alcoholics. This, however, was treated in executive session wholly and in such way that no acrimony was aroused. The final action on this subject has been somewhat misunderstood and criticised, so I take leave to quote somewhat fully from the report of the committee whose report was finally adopted.

I might say that the action represented the ideas of the conservative group rather than the extreme wets. I quote here from the report of the committee who had the matter in charge, read by Dr. A. W. Booth of New York and adopted unanimously by the House of Delegates:

"The condition of hysteria into which the country was thrown by the struggle over the prohibition amendment has apparently subsided and the time has come when the American Medical Association should state plainly its attitude with regard to the use of alcohol and alcoholic liquors as therapeutic agents, as well as the position in which the physicians of the country are placed by the present unfortunate state of affairs. Such a statement should have no political bearing whatsoever and is intended to deal with the matter only from the practical and scientific medical standpoint. Alcohol is often very helpful in the treatment of disease and is being used in the practice of a very large number of doctors, many of whom believe it to be an essential and life-saving remedy. These doctors are confronted by a most deplorable situation brought about by the framers of the Volstead Act who unintentionally, we believe, limited the amount of alcohol for one patient to be a pint in ten days. Such physicians believe that in certain cases of serious illness a pint in ten days would be useless, and that law abiding physicians have no other alternative than to violate the law in order to save life. This is wrong and should be corrected. We believe it will be promptly corrected if the situation is properly presented to the authorities in charge.

"Your committee would, therefore, recommend that with the cooperation of the special committee, headed by Dr. Mayer of Pennsylvania and the excellent executive of the Bureau of Legal Medicine and Legislation, Dr. Woodward, the Board of Trustees be directed to prepare a bill to be presented to Congress, correcting the unfortunate provision of the Volstead Act limiting the amount of alcohol used, and providing such regulations as will permit doctors to prescribe whatever amounts of alcoholic liquors may be needed for their respective patients, and subject to such reasonable restrictions as may be thought wise and best after a conference with the head of the prohibition department."

It is with some sense of defeat and disappointment that I report failure to bring the 1928 meeting of the American Medical Association to Portland. I shall present no alibi. After looking the field over carefully, we who were present officially and unofficially decided it would be best to withdraw from the field, leaving the way open and laying the foundation for Portland in 1929.

It has reached the point where it takes a pretty well organized campaign to take the American Medical Association to any given place. To take it to the far west, to Oregon, with its single delegate, will require very definite and well worked out plans. While the delegate is the most efficient avenue of approach to other delegates, we should send at least half a dozen other good active men unto the ground early, so as to let our plans be known. I will not at this time go into further details, but would urge an early and efficient organization of the campaign for the 1929 session of the American Medical Association at Portland.

In closing, I wish to express my appreciation for the honor which you have conferred upon me in representing the State Society in the great American Medical Association.

REPORTS OF COMMITTEES

Committees on Scientific Work

Dr. Frederick D. Stricker, chairman, moved that the printed program be made the report of this committee. The motion was seconded and it was voted that the program be accepted as the report of the committee and filed.

Report of Committee on Revision of Constitution and Bylaws

The executive secretary reported that the committee on the revision of constitution and by-laws did not hold any meetings during the year. A very thorough revision of the constitution and by-laws was made by the committee for the year preceding and their report was used as a basis for revising the constitution and by-laws. The Council of the Society used this report in preparing a revision and the recommendations of the Council were submitted to the members and the constituent societies sixty days in advance of the session, as required by the existing constitution and by-laws.

On motion duly made and seconded, it was voted to place the proposed revision of the by-laws on the table for twenty-four hours.

On motion duly made and seconded the following constitution was adopted:

ARTICLE I.

NAME OF THE SOCIETY

The name and title of this organization shall be The Oregon State Medical Society.

ARTICLE II.

PURPOSES OF THE SOCIETY

The purpose of this Society shall be to federate and bring into one compact organization the entire medical profession of the State of Oregon and to unite with similar associations in other states to form the American Medical Association; with a view to the extension of medical knowledge, to the advancement of medical science, to the elevation of the standard of medical education, to cooperation with duly constituted health authorities in a study of the cause and cure of disease and in preventing its spread; to the enactment and enforcement of just laws for the protection of public health; to the promotion of friendly intercourse among physicians, to the guarding and fostering of their material interests; and to the enlightenment of public opinion in regard to the great problems of medicine so that the profession shall maintain high and honorable standards within itself and be useful to the public in the prevention and cure of disease, and in prolonging and adding comfort to life.

ARTICLE III.

COMPONENT SOCIETIES

Component societies shall consist of those county and district medical societies which hold charters from this society.

ARTICLE IV.

COMPOSITION OF THE SOCIETY

This Society shall consist of active members who shall be the members of the component county and district medical societies who have been certified to the headquarters of this Society, and whose dues and assessments for the current year have been received by the Secretary. There may also be nonresident, honorary, life, associate, and junior members as prescribed in Chapter I of the By-laws.

ARTICLE V.

OFFICERS

Section 1. The officers of this Society shall be a President, a President-Elect, three Vice-Presidents, a Secretary, a Treasurer, and nine Councilors.

Section 2. The officers, except the President and the Councilors, shall be elected annually; the terms of the Councilors shall be for three years; one-third to be elected each year. All those officers shall serve until their successors are elected and take office, provided that the President-Elect shall succeed to the Presidency at the close of the next annuel session after his election.

ARTICLE VI.

HOUSE OF DELEGATES

The House of Delegates shall be the legislative body of the Society and shall consist of (1) delegates elected by the component county and district societies, (2) the officers of the Society enumerated in Section 1 of Article V of this Constitution, and (3) any officer or delegate of the American Medical Association residing in this State.

ARTICLE VII.

COUNCIL

The Council shall consist of nine Councilors, the officers of the Society, and any officer or delegate of the American Medical Association residing in this State. The Council shall be the Board of Trustees of this Society. The Council shall have full authority and power of the House of Delegates between annual sessions, unless the House of Delegates shall be called into session as provided in the Constitution and By-laws. Five of its members shall constitute a quorum.

ARTICLE VIII.

SECTIONS AND DISTRICT SOCIETIES

The House of Delegates may provide for a division of the scientific work of the Society into appropriate sections and for the organization of such district societies as will promote the best interests of the profession. The membership of such district societies shall be composed exclusively of members of component county societies, except that on authorization of the Council physicians in neighboring counties may be grouped together to form a district society.

ARTICLE IX.

SESSIONS AND MEETINGS

Section 1. The Society shall hold an annual session, during which there shall be at least two general meetings open to all registered members, delegates and guests.

Section 2. The time and place for holding each annual session shall be fixed by the House of Delegates or the Council.

Section 3. Special meetings of either the Society or the House of Delegates may be called by the President at his discretion, or by a two-thirds vote of the Council, or upon petition of fifteen delegates.

ARTICLE X.

FUNDS AND EXPENSES

Funds for meeting and expenses of the Society shall be raised by an assessment of not to exceed $20.00 per capita per annum upon active members and an assessment of $10.00 per capita per annum upon associate and junior members. Funds may also be raised by voluntary contribution, from the Society's publications, and in any other manner provided by the House of Delegates or the Council. Funds may be appropriated by the House of Delegates and the Council to defray the expenses of the Society.

ARTICLE XI.

REFERENDUM

A general meeting of the Society or the House of Delegates may, by a two-thirds vote of the respective members present, order a general referendum upon any question pending before the House of Delegates and submit such question to the membership of the Society for a final vote by mail or otherwise. A majority vote of all the active members shall determine the question and the decision so reached shall be binding upon the Society and the House of Delegates.

ARTICLE XII.

SEAL

The Society shall have a common seal. The power to change or renew the seal shall rest with the House of Delegates.

ARTICLE XIII.

AMENDMENTS

Amendments to this Constitution shall be made by a two-thirds vote of the registered delegates at any annual session, provided that any such amendment shall have been presented in open meeting at the previous annual session and published during the year in two successive issues of the bulletin or journal of the Society; or that any such amendment shall have been approved by the Council and sent to each component society at least sixty days prior to the date of the annual session at which said amendment is to be considered.

Report of Auditing Committee

Dr. Otis B. Wight, acting chairman, made the following report:

The Auditing Committee in the absence of its chairman, Dr. C. J. Smith, begs to make the following report to the House of Delegates:

We have examined the statements made out by the office of the Executive Secretary, one covering the period from the last annual meeting, March 1, to December 31, 1926, and the second one covering the period from January 1 to August 31, 1927. As the books are not available the reports seem to be correct.

We would suggest, however, that a former recommendation of this committee be put into permanent effect—namely, that every year the Secretary and the Treasurer be authorized to select a firm of public accountants, which will render a statement of the finances of the Oregon State Medical Society, both of its general fund and its medical defense fund, and also for the Oregon Public Health League, the same to be prepared just in advance of the annual meeting of this Society.

This recommendation was made two years ago at Medford. We were given a lot of vouchers to look over in a hurry; we were given a lot of books to go over, and it did not seem fair, either to the Auditing Committee or to the Treasurer, that incompetent men, incompetent financially, as physicians are supposed to be, should have the power of auditing, where you have considerable funds on hand in your various departments. Therefore, it seems to me that we should have appointed each year a firm of public accountants who, I am sure, for a reasonable sum will give us an accurate check of the different funds of the Society.

On motion duly made and seconded it was voted that the following provision be substituted for Section 5 of Chapter 7 of the proposed revision of the by-laws, this substitute amendment to lie on the table for twenty-four hours:

> The Council shall each year in advance of the annual meeting employ a certified public accountant to audit the books of the Oregon State Medical Society and the Oregon Public Health League. The report of such accountant shall be presented to the House of Delegates with the Treasurer's report on the first day of each annual meeting.

Committee on Nominations

President Morse appointed the following Committee on Nominations: Hugh S. Mount, E. B. Pickel, L. O. Clement, John W. Sifton, A. B. Peacock, E. B. McDaniel, and Otis B. Wight.

The House of Delegates adjourned at 1:15 p.m.

Second Session

Friday, September 2

The Second Session of the House of Delegates was called to order by the president, W. B. Morse, at 7:30 A.M. in the banquet room of the Hotel Marion.

On roll-call the following officers and councilors were present: W. B. Morse, Hugh S. Mount, L. B. Bouvy, John W. Sifton, A. B. Peacock, Frederick D. Stricker, J. Earl Else, Joseph A. Pettit, William Kuykendall, E. B. McDaniel, Charles E. Sears, C. L. Booth, H. J. Clements, Wilson Johnston, and the executive secretary. The following officers and councilors were absent: Frank Mount and C. J. Smith.

The following delegates who were seated at the opening session were present: George Vandeveort, E. C. Joseph, J. H. Robnett, R. J. Pilkington, A. B. Peacock, E. B. Pickel, L. L. Truax, L. S. Kent, John W. Sifton, L. O. Clement, C. A. Downs, Otis B. Wight, Louis P. Gambee, C. H. Manlove, M. K. Hall, Frank E. Boyden, A. G. Bettman, C. J. McCusker, Otis F. Akin, John H. Fitzgibbon, F. G. Swedenburg, and David Robinson. Alternate delegate A. B. Peacock was seated in place of regular delegate Robert J. Dixon who was absent. Regular delegate C. J. Bartlett was seated in place of J. G. Gregory who was seated at the opening session by vote of the House.

The following delegates were absent: Robert J. Dixon, G. I. Hurley, Harold C. Bean, Lyle B. Kingery, Fred Ziegler, and L. Howard Smith.

Report of Committee on Public Health and Disease Prevention

In the absence of Dr. William T. Phy, chairman, the executive secretary read the following report:

Your committee on Public Health and Disease Prevention are of the opinion that the profession generally is not awake to the possibilities of preventive medicine. This is quite clear when we compare our knowledge of the cause of communicable diseases with the incidence of these diseases in the state.

The cause, source of infection, and means of transmission of a number of communicable diseases, are definitely known and analysis shows that from 45 to 60 per cent of all disabling sickness is due to external and hence preventable causes.

In spite of the fact that the cause and means of prevention of many of the common communicable diseases are so well known, the incidence of these diseases in Oregon remains very high. In 1926, 936 cases and 60 deaths from diphtheria were reported. Approximately 90 per cent of the deaths were of children under ten years of age. The incidence of smallpox is also high. In 1926, 1557 cases and five deaths from this disease were reported and there was one case of hemorrhagic smallpox in the southern part of the state. There were 306 cases and 36 deaths from typhoid fever during the year. A comprehensive study of venereal disease likewise indicates that these diseases are not being efficiently treated.

These figures are appalling, when we consider the preventive and curative measures which have been developed to combat these diseases. We know that diphtheria can be prevented by the use of toxin-antitoxin which induces a lasting immunity and that this disease can be cured by the early use of antitoxin. Smallpox also can be prevented by vaccination. All children should be protected against diphtheria and smallpox by vaccination during the first year of life. This may be safely done any time after the third month.

The mortality from typhoid fever in the World War as compared with that of the Spanish-American War indicates that this disease can be almost eliminated by sanitation and inoculation. Typhoid fever was practically unknown during the last war, whereas in the Spanish-American War there were thirty deaths from this disease for every genuine war casualty. The successful handling of venereal disease during the late war also indicates that these diseases yield to proper methods of prevention and treatment.

A recent goiter survey showed that 23.3 per cent of the boys and 38.3 per cent of the girls have thyroid enlargements. For the prevention of thyroid disease we should apply prophylaxis during pregnancy and lactation according to the plan advocated by Marine. Annual physical examinations should be made in the schools, and children with thyroid enlargements should be referred to physicians skilled in treating such conditions. Oral prophylaxis should also be applied.

Oregon has one of the lowest infant death rates in the United States but the maternal death rate is not so favorable. There are too many deaths from puerperal infection. This is similarly preventable.

The improvement of these bad conditions and the bringing of our record in the handling of communicable disease abreast of our medical knowledge can be accomplished by the joint action of practicing physicians and the state and voluntary health agencies.

So far as the practicing physician is concerned, there are one or two definite things to be done. One of these is to report promptly every case of communicable disease. There is great laxity among physicians of the state in reporting tuberculosis and venereal diseases, and yet the proper control of communicable disease rests upon prompt and accurate reporting. In many diseases it is important that the reports be made by telephone or telegraph. The prompt and accurate reporting of communicable diseases is a duty that the physician owes not only to the state, but to furnish the health official with reliable statistics for determining the efficiency of control measures.

The periodic health examination constitutes, perhaps, the most important general preventive measure. The examinations of large numbers of persons in the army, in industry, in schools and colleges, and by insurance companies has called attention to the fact that there are large numbers of people who consider themselves well but who upon examination are found to be far from normal. The evidence all shows that malformation, physical defects, and diseased organs are extremely common. Periodic health examinations and proper treatment of the abnormal conditions found constitute the best available method for decreasing these unsuspected physical defects. Every physician should encourage his patients and their families to present themselves for at least one examination every year.

The practicing physician also owes his cooperation in the program of educating the public which is being carried on by all the health agencies official and voluntary in the state, including the state medical society, the county and district medical societies, the state tuberculosis association, county public health associations, the church, the press and the educational authorities. All the efforts of these organizations must be brought to bear, so that the public will learn that diphtheria, smallpox, typhoid fever and similar diseases are communicable and preventable, and that the people of the state need only make use of the knowledge which medical science has made available. This foundation of education is necessary in order that the public will be receptive to the various preventive measures which must be applied.

Experience has demonstrated, however, that every community should have an agency of its own, whose business it is to protect the public health. Part-time health officers cannot do their work without sacrificing their own practice and other physicians in the community often find it impossible to cooperate with a health officer who is also engaged in general practice like themselves.

The need for an official health agency in every community has been met by the establishment of the full-time county health unit, of which there are 337 in the United States, each of which is under the direction of a qualified full-time county health officer. The full-time county health unit assists the practicing physician to materially reduce the volume of sickness and the number of premature deaths by supplying public health nursing, laboratory service, special clinics and public health education.

The state of Oregon has partially recognized the need for an organized health service by the establishment of seven full-time county health units which have now been in successful operation for more than four years. Each of these units has a full-time health officer, two nurses and a clinical clerk. The establishment of these units has given the people in the rural areas and villages of the state a health protection service which has heretofore been available only to the cities.

The committee believes that it should be the ultimate aim of the state medical society to support a program of adequate health protection in every county in the state. In order to carry out this aim we recommend that every county with a population of 20,000 or over be urged to establish a full-time county health unit with an annual budget of not less than $10,000.

Respectfully submitted,
W. T. Phy, Chairman
J. Guy Strohm
O. C. Hagmeier
Seth M. Kerron
George E. Houck

On motion duly made and seconded, it was voted that this report be adopted and placed on file and that copies be given to the press for publication.

Report of Committee on Public Policy and Legislation

In the absence of Dr. C. J. Smith, chairman, the executive secretary read the following report:

A detailed account of the legislative activity of the committee is contained in the report of the Oregon Public Health League, the executive committee of which has the same personnel as this committee.

The chief features of the legislative work were the defeat of the attempt to repeal the law requiring the medical examination of male applicants for marriage licenses, the insertion of the requirement in the chiropractic and naturopathic codes that applicants for licenses must be graduates of a standardized high school or possess the equivalent of such education as determined by the superintendent of public instruction, and the amendment of the medical practice act. The law enforcement activity of the State Board of Medical Examiners since the passage of these amendments indicates that substantial returns will accrue from the registration fee which is now a feature of the medical practice act.

A basic science act was also introduced but was not passed, chiefly because the members of the legislature are not yet aware of its importance as a public health measure. However, much was accomplished in the way of education and the act should be pressed at the 1929 session of the legislature.

The committee believes that the work during the coming year should be carried on along several very definite lines. A speaker's bureau should be organized, consisting of members of the Society who will make talks before clubs and other organizations on the preventive side of medicine and on various aspects of public health. Each club throughout the state should be urged to have at least one talk on health during the year and this talk should be made by some member of the Society. We must begin actively to participate in the education of the public and when we do our legislative program will go through with less effort.

The basic science act should be given publicity throughout the state and local societies should have meetings with their members of the legislature so that the latter will be informed concerning it. The executive secretary will proceed with the Portland City Club study of unlicensed healers and this should amply care for the situation in Portland.

Lastly, the committee recommends that the State Society office be made a center of health information with a complete stock of pamphlets and literature on health subjects. Much has already been done along this line but the members are urged to call upon the office more frequently for information and literature for use in their communities. The importance of increasing the subscription list of *Hygeia* is apparent and this can be done through the state society office which can secure a price of $2.00 per year.

Respectfully submitted,

C. J. Smith, Chairman
Ralph Fenton
E. B. McDaniel
Wilson Johnston
C. L. Booth

Report of Committee on Publications

In the absence of Dr. Wm. House, chairman, Dr. A. G. Bettman read the following report:

The Publications Committee believes that the conception that the medical society should do nothing is wrong. This committee has, therefore, given much time to the activities covered by its title, and beg leave to report on these activities.

The executive secretary, at the suggestion of one of the members of the committee, clipped the medical advertising from the four Portland dailies. This advertising was then divided roughly into three groups which were more or less indefinitely separated from one another; namely, bad, borderline and not objectionable. As the result of this it was found that the largest Portland daily published during the week of October 23 to 30, 1926, 707 column inches of bad advertising, 150 inches of borderline and 77 inches which were put in the not objectionable class. This daily receives about $3.00 a column inch for its space, which would give it an income of $2,121 per week, or over $110,000 a year from this bad advertising, besides what is received from the other two classifications. The Oregon Journal does not accept medical advertising, except for simple household remedies, such as tooth paste, aspirin, etc., and these are especially vised.

During the year the newspapers came out on their pages with notices of a so-called new cure for tuberculosis by one Kirkpatrick, a veterinary and chiropractor. The papers asked for a statement from the State Medical Society. A meeting was held at the instance of Dr. Ralph Matson, present being Drs. Matson, E. A. Pierce, U. C. Coe; Mr. Wilcox, publicity director of the Oregon Tuberculosis Association; Mr. Clyde C. Foley, executive secretary of this society; and Dr. A. G. Bettman, representing the Publications Committee. At the suggestion of this group the Publications Committee prepared a statement which was sent to all newspapers in an attempt to correct the misstatements published. Attention was called to the American Medical Association's analysis of Kirkpatrick's redemy, which had previously appeared in the Journal of the American Medical Association. This statement called attention to the harm which would be done by the remedy and by raising false hopes in the minds of the public.

An effort was made directly through the Portland Better Business Bureau to stop the advertising of Ionaco which was only partially successful. The weakness that your committee had to face was the fact that the medical profession had no positive data on the harmfulness of this device.

During the past year the medical advertising appearing in all newspapers in Oregon has been clipped and tabulated, and is of value as an index of quackery in Oregon.

The Publications Committee through the executive secretary has procured the suppression of the irrational articles written by one McCoy, which appeared in a Portland afternoon paper. Finally, the news editor was sufficiently aroused so that he consulted his family physician on the matter. Fortunately, the family physician was aware of our activities and when the question was put to him he explained the perniciousness of the articles and they were at once discontinued. We found that *Hygeia* was of very great value in this effort. We wish to thank Dr. R. E. L. Holt for his activities in this connection. A number of copies of *Hygeia* covering the McCoy matter were placed in the hands of the News editor.

Your executive secretary carefully checks the names of physicians and surgeons in the classified sections of the Portland City Directory and the Portland Telephone Directory, and a number of names of persons claiming to be physicians and who are not were removed from the publications as the result of this activity.

The Publications Committee recommends that the physicians throughout the state make special effort to the end that their patients subscribe for *Hygeia*. A letter is now in preparation to all the physicians of Oregon to the effect that through special arrangements with the American Medical Association subscriptions can be had for a limited time for $2.00 a year. This is a saving of $1.00 for every subscription. This journal should be on the waiting-room table of every physician and dentist in Oregon, and in the homes of their patients.

We recommend that the medical society set aside a fund for the purpose of providing copies of *Hygeia* to high school and college libraries, and the recreation rooms of large corporations and clubs. We also recommend that copies of books like Fishbein's "Medical Follies" be placed in every library in the state and in libraries of high schools and other institutions of higher learning.

We recommend that a systematic effort be made to furnish to the newspapers of the state items of public interest on medical subjects. These items preferably should be sent out through the executive secretary or through representatives in various cities, so that they may be properly vised before publication, so as to bring out helpful features and eliminate harmful ideas and self-advertising.

It is often difficult for the executive secretary to handle certain matters alone, as he is looked upon as a paid agent of the "medical trust." He can and will furnish information that should be used by the members, when they observe questionable procedures either in the papers or in statements of individuals. Perhaps you do not know that the christian science organization all over the world answers every public statement which directly or indirectly reflects on their doctrines or practices. The physicians should be as alert in protecting the public health and in fighting falsehoods, as are these people in upholding their beliefs. Members of fraternal organizations should call the attention of the editors when any bad medical advertising appears in the official fraternal publication.

Recently a member of the Publications Committee noted that the monthly publication of the Modern Woodmen of America, which has a membership of over a million, contained questionable advertising. This was called to the attention of the editor. No reply was received. The head counsel was then addressed and a reply was immediately received to the effect that the matter would be brought up at the next meeting of the Executive Board. Following this meeting a letter was received from the editor asking for further information and showing his desire to carry out the ideals of the medical profession, and stating that his lack of information was due to his inability to receive same. Detailed information on these questionable advertisements was furnished and it is believed that this publication, which numbers over 2,000,000 readers, will be free from this type of advertising as soon as the present contracts expire.

The state society should have available for the use and distribution of its members various publications on quackery, nostrums, and the protection of research, etc., gotten out by the American Medical Association, and members are urged to call upon the executive secretary for these pamphlets which the state society should furnish gratis. A definite amount of money should be appropriated for this purpose.

During the past year many commendatory letters have been sent out by the executive secretary to newspapers and public men on occasions where they have indicated a sound policy on public health matters.

One of the concrete things that organized medicine has done for its members is the establishment and operation of the Medical Society Telephone Service in Portland. This has been of immense good along the lines of publicity as it has established a definite twenty-four hour contact with the public. The public is learning to call the telephone service for information on all matters relative to the practice of medicine. The executive secretary reports that the number of inquiries regarding quack remedies, unlicensed men, etc. have steadily increased since the establishment of the service last January. This telephone service is rendering an important and definite service not only to the physicians of Portland, but through increase of prestige to the entire profession of the Northwest.

At the time of the last school election in Portland the telephone service telephoned every doctor and dentist and many other persons, calling their attention to the fact that two of the candidates were running for the office of school director on platforms which were inimical to the public health. These men were both defeated.

Incidentally, the Medical Society Telephone Service is saving its over two hundred members $7.50 a month, which amounts to over $18,000 a year. The Medical Society Telephone Service is rapidly becoming the center to which the public is looking for information.

The state society should publish a monthly bulletin to be sent to the members of the medical profession, informing them of the activities, and keeping them definitely informed on all matters pertaining to the profession. This bulletin will not contain scientific matter. Special issues will be devoted to special problems and these issues distributed to a selected group of laymen.

We have left for the last perhaps the most important item of this report. Recently, the Portland Oregonian granted the Publications Committee space for an article in their Sunday issues. Various physicians have been requested to prepare articles along the lines of their specialty, these to be edited by the Publications Committee before being published. A number of articles have been received and sufficient number of papers have been prepared and edited, so that it is hoped to begin publication very shortly. It is intended that these articles shall later be made available for publication throughout the state through their being issued in booklet form. These articles will be run under the auspices of the Publications Committee of the Oregon State Medical Society.

We trust that you will find the recommendations of this report of sufficient value to have them carried out in the spirit in which the recommendations are made.

Respectfully submitted,
Wm. House, Chairman
T. Homer Coffen
A. G. Bettman

On motion duly made and seconded, it was voted to refer to the Council the matter of setting aside the sum of two hundred and fifty dollars annually for the purchase of literature for purposes of public education.

Report of Committee on Hospital Betterment

In the absence of the chairman, Dr. W. B. Holden, the executive secretary read the following report:

I have been unable to get the committee on Hospital Betterment together. I have written to Dr. Bean and Dr. Pilkington, the other members of the committee. I have not heard from Dr. Bean as yet.

I had a short letter from Dr. Pilkington, in which he suggests that the Society consider the advisability of investigating the feasibility of asking the hospitals, as far as possible, to equip themselves for physiotherapy. I am inclined to agree with Dr. Pilkington that physiotherapy handled in a sane, judicious way, in conjunction with other therapeutic measures, would be of value to our hospitals.

Respectfully submitted,
W. B. Holden, Chairman

Report of Board of Journal Trustees

In the absence of a report from the trustees, Dr. Clarence A. Smith of Seattle, editor of NORTHWEST MEDICINE, made the following verbal report:

I don't know exactly what kind of a report is wanted. The Journal has been going on much as usual. We have maintained the same size in publication during the year.

There has been no special meeting of the Journal Trustees, except at the annual meeting which was held in Boise. I didn't attend that meeting, being in the East. Dr. Olmstead, my assistant, was there representing the Journal. It is customary at those annual meetings to get together as many of the trustees as possible, but at some of the meetings the trustees are particularly distinguished by their absence. I don't know if any of the Oregon trustees were present at that meeting in Boise. That was the meeting of the Pacific Northwest Medical Association. Dr. Olmstead reported to me that they had a meeting and reported the progress of the Journal, and made a financial report.

It is customary on those occasions to have a dinner or a luncheon, getting together the trustees who are present and if they are not there, some representatives from the three states. Such a meeting was held at that time and the usual report of the Journal was made. Dr. J. Earl Else of your society was present, but I don't know whether anyone else from Oregon was at that meeting.

Report of Committee on Medicolegal Defense

Dr. Wilson Johnston, chairman, read the following report:

At the last report there were eleven malpractice suits pending. Before January 1, 1927, one new case was filed, making us start the new year with a docket of twelve cases. Since January 1 five new suits have been started. Two suits have been won by members of this society, two have been lost, and three settled out of court. Ten suits are still unsettled. Of the four verdicts against the doctors in the last three years all have been appealed and are awaiting the action of the Supreme Court. The damages awarded in the four cases amount to $23,250.00.

You will notice that three cases were settled out of court this year. This was without the knowledge of your Committee and may have been good policy, but is not in accord with what your Committee believes to be the attitude of this Society toward all malpractice suits. The verdict of $5,000.00 against Dr. R. C. Kelsey was entirely the result of testimony of members of this Society, that it was criminal to perform a major operation in a doctor's office. No evidence was produced to show that the woman received any more damage on account of the operation being performed in the doctor's office than she would, had she been operated upon in a hospital. It seems that this verdict calls for some action from this body to determine what operations may or may not be performed in a doctor's office. The members of this Society should be informed of the decision of this body so they may act in harmony with it.

There seems to be a sentiment prevailing quite generally among people that, if the results of treatment are not just what they expect, the doctor is to blame and they are entitled to compensation. In several instances suits against the doctor have been started by persons who had already received compensation from the state or from an insurance company. The Supreme Court of Oregon has never passed on this question, but the Circuit Court of Multnomah County has in six or eight cases held that accepting compensation from the state constituted a bar to further action. The Supreme Courts of Washington, New York, and Illinois also held that it constitutes a bar, while the Supreme Courts of Minnesota and Kansas hold to the contrary. The matter is still a debatable one and calls for care and caution on the part of doctors handling industrial accident practice.

In the case of Dr. W. Donald Nickelsen, sued for malpractice in the application of radium, the testimony was the patient's word against the doctor's, the doctor stating that he had told the patient to remove the radium after sixteen hours, the patient stating he had told her to leave it until he returned. It would seem that such suits could be avoided by the use of written directions.

The following amounts were expended from the Medical Defense Fund:

J. W. McCulloch—Legal services—Dr. W. J. Weese of Ontario	$200.00
Telegrams	1.08
Carey & Kerr—Legal services—Holland vs. Drs. Neal and Howard of Eugene	19.15
Carey & Kerr—Legal services—Ruby Gill vs. Drs. Selling and Margason of Portland	100.00
Total	$320.23

Respectfully submitted,
Wilson Johnston, Chairman
Dorwin Palmer
Charles R. McClure
Frederick A. Kiehle

The Committee on Medical Education and Hospitals had no report to make.

Report of Committee on Cancer Control

Dr. Otis B. Wright, acting chairman in the place of Dr. Ernest F. Tucker, deceased, read the following report:

When your president appointed a committee on Cancer Control last year, Dr. Ernest F. Tucker was made chairman of this committee. You all know that he passed away July 2, this year, after an illness which had kept him out of his office since February. The balance of the committee feels that a statement should be made as to Dr. Tucker's interest in cancer.

From the time that the American Society for the Control of Cancer was organized, he was made the Regional Director for the Society for the states of Washington, Idaho and Oregon. He spent a very considerable part of his time in giving addresses to medical societies and lay organizations and developed interest in many of the members of this, state and the state societies of Washington and Idaho, so that a decided step forward has been made in these states in the effort toward early diagnosis and proper treatment.

He was also interested in and spent much time on the pathology of cancer. His latest effort was the formation of a committee, working through the various hospitals in Portland in conjunction with the Medical Department of the University of Oregon. This committee has started a survey of the cases of cancer which are operated on or treated at the various Portland hospitals each year in an effort to develop a systematic study of the disease in these different hospitals. A part-time secretary is working in the surgical department of the University of Oregon Medical School, checking over the histories of the cancer patients as they come from the various hospitals. It was Dr. Tucker's intent to be able each year to make a definite report as to the number of cases of cancer seen and treated in Portland, and also to start a follow-up record so that these patients could be traced and effort made to determine the results of the various types of treatment. These follow-up letters were to be written in the names of the various hospitals, so that there would be no feeling of interference on the part of the patient's physician.

No such survey as this has been developed in any other city on the coast as far as is known, and it was hoped that starting such a survey would bring about similar work in other cities on the coast and, further, would add something to the knowledge of the disease. Your committee feels that this is the most important step taken in Oregon as far as any study of cancer is concerned and regrets exceedingly that the author of the idea was unable to carry it along to its full development.

We feel that in the death of Dr. Tucker the cause of cancer control and cancer study has lost one of its most enthusiastic, keenest and sanest students.

Respectfully submitted
Otis B. Wright, Acting Chairman
Calvin S. White

On motion duly made and seconded it was voted that the Society should go on record as not advising or approving the use of the so-called Koch Cancer Serum, as there is no proof available showing that this substance is of any value in the treatment of cancer, but that its use may lead many victims of cancer to neglect proper treatment until their condition becomes hopeless.

Report of Committee on State Industrial Affairs

In the absence of Dr. A. B. Starbuck, chairman, the following verbal report was made by Dr. Wm. Kuykendall:

Dr. Starbuck, the chairman of this committee, is not here, but he seems not to have made a report. The committee consisted of Drs. A. B. Starbuck, Hugh S. Mount and myself. Those who are members of the Council will remember the action taken with regard to the work of this committee.

The committee was instructed to appear before the Joint Legislative Committee of the 1927 Legislature and give them the opinion of the medical profession. We made one or two recommendations: one, to let the law alone substantially as it is, but to recommend that they amend it so that an advisory committee to confer with the State Industrial Accident Commission be appointed, and that some of the members of this committee should be regular practicing physicians. The committee appeared before the Joint Legislative Committee, brought the recommendation as from the whole medical profession of the state, and it was very favorably received. In fact, I think it would have been adopted, had there not been a feeling that it was better not to amend the law at all; that if you went into it at all, with the great agitation there was, with the many, many amendments proposed, the law might be torn all to pieces.

If the committee is continued or a like committee appointed, I think it would be well to bear this suggestion in mind and thus make it possible for the profession to have a direct avenue of approach to the Commission, so that all our complaints could be heard in the presence of an intelligent professional advisor.

There was one change made in the hospital law, there being two separate laws, as those of you who are familiar with it will remember, one governing the hospitalization of this class of patients. There was a change made to provide that all funds collected from employees for hospital purposes be maintained as a separate trust fund and that the use of this fund for any other purpose than the care of the sick and injured should be a misdemeanor. This will obviate one very serious matter: men collecting the fund, running it up into hundreds and in some cases more than a thousand dollars, to my own knowledge, and then going into bankruptcy, leaving the physicians who have bills due or who had contracts with these organizations to lose the money due them. Those were the only changes that were made in the law.

Report of the Committee on Military Affairs

In the absence of Dr. H. M. Greene, chairman, the executive secretary read the following report:

The quota of Medical Reserve Officers allocated to the State of Oregon has been completed.

Applications for commission in the Medical Reserve Corps of the Army are still being accepted as the quota for the Ninth Corps Area is not yet complete.

All physicians who are qualified are requested and solicited to make application for commission.

Respectfully submitted,
H. M. Greene, Chairman
George E. Houck
George C. Gaunt
Thomas E. Griffith
L. M. Spaulding

Action on Proposed Reduction in Automobile License Fees

On motion duly made and seconded it was voted that the House of Delegates recommends that the society go on record as not favoring any change in automobile license fees as proposed by a referendum amendment about to be submitted to the people, on the ground that the present road-building program of the state should not be interfered with.

Report of Committee on Honorary Membership

In the absence of Dr. C. J. McCusker, chairman, the executive secretary read the following report:

The committee met at the office of Dr. E. A. Pierce on August 31, 1927, and recommends that on account of their long and active service in the Oregon State Medical Society, the following be given honorary membership in the same: Dr. C. J. Smith of Portland and Dr. Wm. Kuykendall of Eugene.

Respectfully submitted,
C. J. McCusker, Chairman
E. A. Pierce
Otis F. Akin

No action was taken on this report as Dr. William Kuykendall expressed his desire to retain active membership and it was the consensus of opinion that Dr. C. J. Smith had a similar feeling.

Report of Committee on Necrology

In the absence of Dr. Calvin S. White, chairman, the executive secretary read the following report:

Since the last annual meeting forty members of the medical profession have ended their labors and have gone to their eternal rest. Of these fourteen were active members of this Society, several were past presidents, and many more served as officers in other capacities.

W. H. Lott
Otis Butler
E. E. Fisher
Chas. E. Hill
Horace B. Fenton
Geo. Milton Wells
Curtis Holcomb
Henry Waldo Coe
Chas. M. Barbee
Alpha E. Rockey
Ernest F. Tucker
R. D. Alton
James F. Bell
Samuel M. Strohecker

We are appalled at the magnitude of the work of the Great Reaper.

Reminded as we are of the uncertainty of life, we deem it wise to pause for a time in our busy lives and not only consider the work and the examples of those who are gone, but also for retrospection and introspection of our own.

The number of our dead alone precludes this committee drawing or submitting proper resolutions for each one.

Your committee recommends that each component society at an early date set aside an evening to pay tribute to the departed members of that society, and that no other business be transacted on that evening and that the family and friends of the departed members be appraised of the meeting and invited to attend.

Respectfully submitted,
Calvin White, Chairman
J. F. Dickson
S. E. Josephi

Report of Committee on Nominations

Dr. A. B. Peacock read the recommendations of the committee as follows:

For President-Elect............Dr. L. B. Bouvy, LaGrande
For 1st Vice-President............................Dr. John W. Sifton, Hood River
For 2nd Vice-President, Dr. A. B. Peacock, Marshfield
For 3rd Vice-President............................Dr. Clarence W. Keene, Silverton
For Secretary......Dr. Frederick W. Stricker, Portland
For Treasurer.........................Dr. J. Earl Else, Portland
For Delegate to the American Medical Association..........................Dr. Wm. Kuykendall, Eugene
For Alternate Delegate, Dr. E. B. McDaniel, Portland

For Councilor for Second District..........................
..............................Dr. Frank R. Mount, Oregon City
For Councilor for Third District..........................
....Dr. H. J. Clements, Salem
For Councilor for Fourth District..........................
..............................Dr. George E. Houck, Roseburg
For Councilor for Fifth District..............................
....Dr. C. J. Smith, Portland
For Councilor for Eighth District..........................
..............................Dr. W. P. McAdory, LaGrande

Upon motion duly made and seconded it was voted to accept the above report and submit it to the general session of the Society.

Adoption of Bylaws

The following revision of the by-laws, which was presented at the first session and laid on the table for twenty-four hours as required by the constitution and by-laws, was taken from the table and passed upon motions duly made and seconded:

CHAPTER I.

MEMBERSHIP

Section 1. The membership of the Oregon State Medical Society shall consist of active, nonresident, honorary, life, associate and junior members.

Section 2. *Active Members* shall be members of component county or district societies who have paid their dues to the Secretary of their county or district society and who shall be certified to by the Secretary of such county or district society to the Secretary of the State Society. They shall have the right to register at annual meetings and to participate therein after verification of their right to membership and shall sign the registration book, indicating their county or district membership. They shall then be entitled to receive a badge which shall be evidence of their right to all the privileges of membership.

Active members who move to another state or territory may retain their membership in this Society for a period of one year after their removal by paying the regular dues, but such members shall not be entitled to vote or hold office.

Section 3. No person who is under sentence of suspension or expulsion from any component society of this Society, or whose name has been dropped from its roll of members, shall be entitled to any of the rights or benefits of this Society, nor shall he be permitted to take part in any of its proceedings until such time as he has been relieved of such disability.

Section 4. *Nonresident Members* shall be physicians residing outside of Oregon who desire to participate in the scientific activities of this Society; but no such physician shall be permitted to become a nonresident member of this Society unless he is a member of his official state society, provided such society exists. Nonresident members shall pay the regular nonresident dues to their county or district societies but shall not be required to pay dues to this Society.

They shall not be counted in determining the number of delegates to the American Medical Association, nor shall they be permitted to vote or hold office.

Section 5. *Honorary Members* shall be recommended in writing by the Council and shall require a three-fourths vote of all members present to elect. They may includes members of the profession who have distinguished themselves in any special department of medicine; members of the medical profession whose contributions to scientific literature have met with approbation; physicians who have been members of this Society over a long term of years; or any members of other scientific, literary or welfare organizations whose interest, researches or literary contributions have assisted in advancing the science of medicine. Such members shall have the privilege of participating in discussions, and of presenting papers. They shall not be entitled to vote, or be eligible to any office. They shall not, at any one time, exceed 10 per cent of the active membership, and shall pay no dues.

Section 6. *Life Members* shall be physicians who have been active members of the Society for at least ten years or shall have paid at least one hundred twenty-five dollars in dues but who are not in the active practice of medicine in the State; they shall be elected by the Council. They shall be entitled to attend meetings and take part in the proceedings, but shall not be entitled to hold office or be required to pay dues.

Section 7. *Associate Members* shall be physicians who are on active duty in Government service and temporarily resident in this vicinity, full-time health officers, or other men engaged in scientific work connected with a reputable institution of learning or research laboratory. These members shall be elected in the regular manner but they shall not be entitled to vote or hold office. They shall be entitled to a reduced membership charge as provided in Section 1 of Chapter IX of these By-Laws.

Section 8. *Junior Members* shall be recent graduates in medicine who have joined their respective county or district societies and the Oregon State Medical Society within one year after their graduation in medicine or their completion of a term of interneship in some reputable hospital. They shall be entitled to a reduced membership charge for the first three years after graduation or completion of the term of interneship as provided in Section 1 of Chapter IX of these By-Laws. They shall be entitled to all the privileges of membership except those of voting and holding office. After the three years specified they shall become active members paying the regular dues for such membership.

Section 9. Nothing in any of the preceding sections shall be so construed as to prevent the appointment and service of members of any class or committees.

CHAPTER II.

ANNUAL SESSION OF THE SOCIETY

The Society shall hold an annual session at such time and place as shall be determined by the House of Delegates or the Council. Notice of the election of time and place of meeting shall be given the membership at least thirty days prior to such annual session.

CHAPTER III.

GENERAL MEETINGS. ARCHIVES

Section 1. All registered members may attend and participate in the proceedings and discussions of the general meetings and of the sections. Each general meeting shall be presided over by the President, or, in his absence or disability, or at his request, by the President-Elect, or by the Vice Presidents in the order named.

Section 2. No address or paper before the Society, except those of the President and orators, shall occupy more than twenty minutes in its delivery; and no member shall speak more than five minutes, nor more than once on any subject, except the reader of the paper, who may close the discussion. By unanimous consent of the Society an extension of time may be granted.

Section 3. All papers read before the Society shall be its property. Each paper shall be deposited with the Secretary when read; if this is not done it shall not be published in the official journal of the Society.

Section 4. The University of Oregon Medical School library shall be the official library and repository of all books, papers, reports, and minutes of the Society.

CHAPTER IV.

HOUSE OF DELEGATES

Section 1. The House of Delegates shall meet annually at the time and place of the annual session of the Society. If, however, the business interests of the Society and profession require, it may meet in advance or remain in session after the final adjournment of the general meeting.

Section 2. Each component county and district society shall be entitled to send to the House of Delegates each year one delegate or one corresponding alternate delegate for every twenty-five membrs, and one delegate or one corresponding alternate for each major fraction thereof; but each county and district society holding a charter from this Society, which has made its annual report and paid its assessment as provided by this Constitution and By-Laws, shall be entitled to at least one delegate or one corresponding alternate delegate. Each delegate or corresponding alternate delegate so elected shall hold office until his successor is elected and qualifies as such.

Section 3. If there are no delegates or alternate delegates from county or district societies present at annual or special meetings, the House of Delegates may elect acting delegates from among active members of such county or district societies present at the meeting. These acting delegates shall have all the rights and privileges of regular delegates at the meeting at which they are elected, but only in the absence of the regular or alternate delegates.

Section 4. A majority of the registered delegates shall constitute a quorum. All meetings of the House of Delegates shall be open to members of the Society.

Section 5. The President (or Presiding Officer), to expedite proceedings, shall appoint from the House of Delegates the following committees to which reports and resolutions shall be referred:

Committee on New Business.
Committee on Unfinished Business.
Committee on Resolutions.
Committee on Credentials.

He shall also appoint such other committees as may seem necessary.

Section 6. The House of Delegates shall elect representatives to the House of Delegates of the American Medical Association in accordance with the Constitution and By-Laws of that body.

Section 7. The House of Delegates shall approve all memorials and resolutions issued in the name of the Society before the same shall become effective.

Section 8. The House of Delegates shall present a summary of its proceedings to the general meeting on the last day of each annual session and may publish the same in the transactions.

CHAPTER V.

ELECTION OF OFFICERS

Section 1. The House of Delegates on the first day of the annual session shall appoint a nominating committee who shall consult with the members of the Society and report the result of their deliberations to the House of Delegates, giving the names of members selected for the various offices to be filled at that annual session. The House, after acting thereon, shall report to the Society. No two candidates for President-Elect shall be named from the same county.

Section 2. The report of the House of Delegates and the election of officers shall be the first order of business of the Society after the reading of the minutes on the morning of the last day of the general session.

Section 3. All elections of officers shall be by individual secret ballot and a majority of the votes cast shall be necessary to elect. In case no nominee receives a majority of the votes on the first ballot, the nominee receiving the lowest number of votes shall be dropped and a new ballot taken. This procedure shall be continued until one of the nominees receives a majority of all the votes cast, when he shall be declared elected.

Section 4. Nothing in this article shall be construed to prevent additional nominations being made from the floor by members of the Society.

CHAPTER VI.

DUTIES OF OFFICERS

Section 1. The President shall preside at all meetings of the Society, the House of Delegates, and the Council; shall appoint all committees not otherwise provided for; shall deliver an annual address at such time as may be arranged; shall give a deciding vote in the case of a tie; and shall perform such other duties as custom and parliamentary usage may require.

Section 2. The Vice-President shall assist the President in the discharge of his duties. In case of the absence or disability of the President, the Vice-Presidents, in their respective order, shall succeed to the Presidency.

Section 3. The Treasurer shall give bond in such amount and of such character as shall be designated by the House of Delegates of the Council. He shall, under the direction of the House of Delegates or the Council, sell or lease any property belonging to the Society, and execute the necessary papers; and shall in general, subject to such direction, have the care and management of the financial affairs of the Society.

The Treasurer shall deposit all funds of the Oregon State Medical Society in a National Bank in Portland, Oregon, and shall keep in separate accounts the General Fund and the Medical Defense Fund.

He shall pay money out of the treasury on a written order of the President, countersigned by the Secretary; he shall subject his accounts to such examination as the House of Delegates or the Council may order, and he shall annually render an account of his doings and of the state of the General Fund and Medical Defense Fund in his hands. He shall charge upon his books the assessments against each component county or district society at the end of the fiscal year; he shall collect and make proper credits for the same, and perform such other duties as may be assigned to him. In the absence or incapacity of the Treasurer, the President and the Secretary shall be authorized to draw checks on the funds of the Oregon State Medical Society.

At the end of each year, or as soon thereafter as practicable, the Treasurer shall deposit in the archives of the Society all books, papers and records for the year.

Section 4. The Secretary shall attend the General Meetings of the Society and the meetings of the House of Delegates, and shall keep minutes of their respective proceedings in separate record books. He shall be Secretary of the Council. He shall be custodian of all record books and papers belonging to the Society except such as properly belong to the Treasurer, and shall keep account of and promptly turn over to the Treasurer all funds of the Society which come into his hands. He shall provide for the registration of the members and delegates at the annual session. He shall with the cooperation of the secretaries of the component societies, keep a card-index register of all the legal practitioners of the State by counties, noting on each his status in relation to his county society, and shall transmit a copy of this list to the American Medical Association, transmitting to its secretary quarterly, a report containing the names of new members and the names of those dropped from the membership roster during the preceding quarter. He shall conduct the official correspondence, notifying members of meetings, officers of their election and committees of their appointment and duties. He shall employ such assistants as may be ordered by the Council and shall make an annual report to the House of Delegates.

The Secretary, as chairman of the Committee on Scientific Work, shall prepare and issue programs for all meetings of the Society.

At the end of each year, or as soon thereafter as practicable, the Secretary shall deposit in the archives of the Society copies of all papers read before the Society during the year, together with all of the Society's books and documents in his possession.

CHAPTER VII.

THE COUNCIL

Section 1. The Council shall hold monthly meetings. Special meetings may be called by the President or shall be called on petition of three councilors.

Section 2. The Council shall be the executive body of the Society and between sessions shall exercise the powers conferred on the House of Delegates by the Constitution and By-Laws.

The Council shall be the Board of Censors of the Society. It shall consider all questions involving the rights and standing of members, whether in relation to other members, to the component societies or to this Society. All questions of an ethical nature brought before the House of Delegates or the general meeting shall be referred to the Council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members or component societies, on which an appeal has been taken from the decision of a county or district society. Its decision in all cases, including questions regarding membership in this Society, shall be final.

Section 3. Charters shall be issued to county or district societies only on approval of the Council, and shall be signed by the President and Secretary of this Society. Upon the recommendation of the Council, the House of Delegates may revoke the charter of any component society whose actions are in conflict with the letter or spirit of this Constitution and By-Laws.

Section 4. In sparsely settled sections the Council shall have authority to organize the physicians of two or more counties into district societies, and these societies, when organized and chartered, shall be entitled to all rights and privileges provided for component societies until such counties shall be organized separately.

Section 5. The Council shall each year in advance of the annual meeting employ a certified public accountant to audit the books of the Oregon State Medical Society and the Oregon Public Health League. The report of such accountant shall be presented to the House of Delegates with the Treasurer's report on the first day of each annual meeting.

Section 6. The Council shall appoint, at least six months before the annual meeting, a committee, consisting of at least one of its members, to be known as the Committee on Arrangements for the annual meeting. On recommendation of this committee, the Council shall appoint a general chairman of a local committee on arrangements, who shall be a member of the component society of the county in which the annual meeting is to be held, and who shall appoint and organize from the members of this county society the personnel of the local committee on arrangements. The local committee on arrangements shall provide suitable meeting places and shall have general charge of all local arrangements subject to the approval of the Committee on Arrangements for the annual meeting

Section 7. The Council shall by appointment fill any vacancy in office not otherwise provided for which may occur during the interval between annual meetings of the House of Delegates; the appointee shall serve until his successor has been elected and has qualified.

Section 8. The salaries of all employees of the Society shall be fixed by the Council.

Section 9. The Council shall provide such headquarters for the Society as may be required to conduct its business properly.

CHAPTER VIII.

COMMITTEES

Section 1. The standing committees of this Society shall be as follows:

A Committee on Scientific Work.
A Committee on Public Policy.
A Committee on Publication.
A Committee on Medical Defense.
A Committee on Medical Education and Hospitals.
A Committee on Auditing and Appropriations.

Unless otherwise provided in these By-Laws, each of these committees shall consist of three members, each of whom shall serve for a term of three years. One member of each of these committees, except the Committee on Publications, shall be appointed annually by the President, by and with the consent of the House of Delegates or the Council, provided that at the next annual session following the adoption of these By-Laws one member of each of the foregoing committees shall be appointed for a term of three years, one for two years and one for one year.

Section 2. The Committee on Scientific Work shall consist of three members, of which the Secretary shall be chairman. This committee shall determine the character and scope of the scientific proceedings of the Society for each session, subject to the instructions of the House of Delegates or the Council. Thirty days previous to each annual session it shall prepare and issue a program announcing the order in which papers and discussions shall be presented.

Section 3. The Committee on Public Policy shall consist of the President, the President-Elect, and the members of the Executive Committee of the Oregon Public Health League. This committee shall represent the Society in securing and enforcing legislation in the interest of public health and of scientific medicine.

Section 4. The Committee on Publication shall also be the Board of Journal Trustees. One member of this committee, which shall consist of three members, shall be elected annually by the House of Delegates. This committee shall have full power to act in the interest of the Society on all questions relating to publications.

Section 5. The Committee on Medical Defense shall have called to its attention by the Secretary of the State Society notice of threatened or actual suits for malpractice brought against members of the Society. After due notice it shall give a hearing to the member or members threatened with suit and shall report its decision to the Council. It may assist in the defense of the member or members sued.

Section 6. The Committee on Medical Education and Hospitals shall serve in this State for the Council on Medical Education and Hospitals of the American Medical Association, and shall have referred to it all questions pertaining to hospitals and medical education.

Section 7. Reports of standing committees shall be presented to the Council at the last monthly meeting preceding the annual meeting of the Society.

CHAPTER IX.

DUES AND ASSESSMENTS

Section 1. An assessment of twenty dollars per capita on the active membership of the component societies is hereby made the annual dues of this Society; provided, however, that a per capita assessment of ten dollars shall be the dues of associate and junior members. Dues and assessments shall be payable on or before January 1 of the year for which they are levied. The Secretary of each component society shall cause to be collected and shall forward to the offices of the Society the dues and assessments for its members, together with such data as shall be required for a record of its officers and membership. Any member, whose name has not been reported for enrollment and whose dues for the current year have not been remitted to the Secretary of this Society on or before April 1, shall forfeit active membership until his name is properly reported and his dues for the current year properly remitted. In the event that the dues of a member are not paid by the end of the current year, this shall automatically suspend him from membership.

Section 2. Reinstatement of any member who shall have been suspended from membership for nonpayment of dues shall be effected only after his component society again accepts him into its membership and upon payment of dues for one year in arrears and for the current year.

Section 3. If a majority of the members of any county or district society fail to pay their assessments or make the reports required on or before the date above stated, such society shall be held as suspended, and none of its members or delegates shall be permitted to participate in any of the business, proceedings, or privileges of the Society or of the House of Delegates unless by special vote of the House of Delegates.

Section 4. The record of payment of dues and assessments on file in the office of the Secretary of the Society shall be final as to the fact of payment by a member and as to his right to participate in the business and proceedings of the Society and of the House of Delegates.

Section 5. All motions or resolutions appropriating money shall specify a definite amount, or so much thereof as may be necessary for the purpose indicated, and must be approved by the Council or House of Delegates on a call for the ayes and noes.

Section 6. The fiscal year of this Society shall be from January 1 to December 31 of each year.

CHAPTER X.

RULES OF CONDUCT

The principles set forth in the Code of Ethics of the American Medical Association shall govern the conduct of members in their relations to each other and to the public.

CHAPTER XI.

RULES OF ORDER

The deliberations of this Society shall be governed by parliamentary usage as defined in Roberts' Rules of Order, unless otherwise determined by a vote of its respective bodies.

CHAPTER XII.

COUNTY AND DISTRICT SOCIETIES

Section 1. All county or district societies now in affiliation with the State Society or those that may hereafter be organized in this State, which have adopted principles of organization not in conflict with this Constitution and By-Laws shall, upon application to the Council, receive charters from this Society, provided that their Constitutions and By-Laws shall have been submitted to the Council and received its approval.

Section 2. Only one component medical society shall be chartered in each county.

Section 3. Each county or district society shall judge the qualifiations of its own members, but as such societies are the only portals to this Society and to the American Medical Association, every reputable and legally registered physician who is practicing according to the code of ethics of the American Medical Association shall be entitled to membership. Before a charter is issued to any county or district society, its own by-laws must provide that a two-thirds vote of its members present be required to admit to membership. Full and ample notice and opportunity shall be given to every such physician in the county to become a member.

Members of county or district societies who fail to pay the annual assessment to the State Society by the end of the current year, as provided in Section 1 of Article IX of these by-laws, shall be automatically suspended from membership in their county or district society. A member of a component society whose license has been revoked shall be dropped from the membership automatically as the date of revocation. The Council of the State Society shall have final authority to expel a member should a component county or district society fail to do so after being so requested by the Council.

Section 4. Any physician who may feel aggrieved by the action of his county or district society in suspending or expelling him, shall have the right to appeal to the Council, whose decision shall be final. A county or district society shall at all times be permitted to appeal or refer questions involving membership to the Council of the State Society for final determination.

Section 5. In hearing appeals the Council may admit oral or written evidence as in its judgment will most fairly present the facts, but in the case of every appeal both as a board and as individuals, the Councilors shall, preceding all such hearings, make efforts at conciliation and compromise.

Section 6. When a member in good standing in a component county or district society moves to another county or district in this State, he shall be given a written certificate of these facts by the secretary of his society, without cost, for transmission to the secretary of the society in the county or district to which he moves. Pending his acceptance or rejection by the society in the county or district to which he removes, such member shall be considered to be in good standing in the county or district society from which he was certified and in the State Society to the end of the period (respectively) for which his dues have been paid.

Section 7. Each county society shall have general direction of the affairs of the profession in the county, and its influence shall be constantly exerted for bettering the scientific, moral, and material condition of every physician in the county. Systematic efforts shall be made by each member, and by the society as a whole, to increase the membership until it includes every eligible physician in the county.

Section 8. At some meeting at least sixty days in advance of the annual session of this Society, each component county or district society shall elect one or more delegates and an equal number of individual alternate delegates therefor to represent it in the House of Delegates of this Society, in accordance with Chapter IV, Section 2, of these By-Laws. The secretary of each county or district society shall send a list of such delegates and alternates to the Secretary of this Society at least thirty days before the annual session.

Section 9. The secretary of each county or district society shall keep a roster of its members and a list of the registered physicians of the county or district, in which shall be shown the full name, address, college, and date of graduation, date of license to practice medicine in this State, and such other information as may be deemed necessary. He shall furnish to the Secretary an official report containing such information upon blanks supplied him for the purpose sixty days in advance of each annual session. In keeping such a roster the Secretary shall note any changes in the personnel of the profession by death or by removal to or from the county or district, and in making his annual report he shall be certain to account for every physician who has lived in the county or district during the year.

CHAPTER XIII.

Oregon Public Health League

EXECUTIVE SECRETARY

Section 1. The proper officers of this Society are hereby authorized and directed to remit as rapidly as available to the duly elected Treasurer of the Oregon Public Health League, who shall be properly bonded, a sum of money not to exceed ten dollars per active member per year; but in no instance shall a sum be remitted greater than fifty per cent of the amount received from each active member during the year.

Section 2. In consideration of the sum or sums of money set aside for the Oregon Public Health League as provided for in Section 1, of this Chapter, the Executive Secretary of the League shall be required to perform the work of an executive secretary of the Oregon State Medical Society under the direction of the Council of this Society.

CHAPTER XIV.

AMENDMENTS

Section 1. These By-Laws may be amended by a two-thirds vote of the delegates present at any annual session at which at least a majority of the active component county and district societies are represented, provided the proposed amendment has been properly submitted to the House of Delegates and has lain on the table for one day.

Section 2. Upon the adoption of this Constitution and these By-Laws, all previous Constitutions and By-Laws are hereby repealed.

The House of Delegates adjourned at 9:15 a.m.

GENERAL BUSINESS SESSIONS OF THE SOCIETY

Friday, September 2

First Session

The first general business session of the Society was called to order by the president, W. B. Morse, at 9:30 a.m. in the Auditorium of the Salem Chamber of Commerce.

The Secretary reported that the House of Delegates had voted to approve the revision of the constitution and by-laws as previously submitted to the members and to the component societies, except that the following provision was substituted for Section 5 of Chapter 7 in the proposed revision of the by-laws:

> The Council shall each year in advance of the annual meeting employ a certified public accountant to audit the books of the Oregon State Medical Society and the Oregon Public Health League. The report of such accountant shall be presented to the House of Delegates with the Treasurer's report on the first day of each annual meeting.

On motion duly made and seconded it was voted that the action of the House of Delegates in adopting the revised constitution and by-laws be approved.

The Secretary reported that the House of Delegates recommended that the Society go on record as not favoring any change in automobile license fees as proposed by a referendum amendment about to be submitted to the people, on the ground that the present road-building program of the state should not be interfered with.

On motion duly made and seconded it was voted to approve this recommendation regarding automobile license fees.

The Secretary reported that the House of Delegates had voted that the Society should go on record as not advising or approving the use of the Koch Cancer Serum, as there is not proof available showing that this substance is of any value in the treatment of cancer, but that its use may lead many victims of cancer to neglect proper treatment until their condition becomes hopeless.

On motion duly made and seconded it was voted to accept this recommendation and to give notice of this action to the newspapers through the Committee on Publications.

The Secretary reported that the House of Delegates had made the following nominations of officers for the ensuing year:

For President-Elect—Dr. L. B. Bouvy, LaGrande
For 1st Vice-President—Dr. John W. Sifton, Hood River
For 2nd Vice-President—Dr. A. B. Peacock, Marshfield
For 3rd Vice-President—Dr. Clarence W. Keene, Silverton
For Secretary—Dr. Frederick D. Stricker, Portland
For Treasurer—Dr. J. Earl Else, Portland
For Delegate to the American Medical Association—Dr. Wm. Kuykendall, Eugene
For Alternate Delegate—Dr. E. B. McDaniel, Portland
For Councilor for Second District—Dr. Frank R. Mount, Oregon City
For Councilor for Third District—Dr. H. J. Clements, Salem
For Councilor for Fourth District—Dr. George E. Houck, Roseburg
For Councilor for Fifth District—Dr. C. J. Smith, Portland
For Councilor for Eighth District—Dr. W. P. McAdory, LaGrande.

There being no further nominations from the floor, on motion duly made and seconded, it was voted that the rules should be suspended and the Secretary instructed to cast the individual ballots of the members for the candidates named.

The Secretary, as instructed, cast the individual ballots of the members for the candidates named and they were declared elected.

The business session of the Society adjourned at 9:55 a.m. and the Society assembled in scientific session.

Second Session

The second general business session was called to order by the president, W. B. Morse, at 2:00 p.m. The president announced that it was now in order to seat the new president, Dr. Hugh S. Mount. Dr. Mount was escorted to the chair by Drs. E. A. Sommer and W. B. Holden.

After receiving the congratulations of the outgoing president, Dr. Mount was duly installed as president and assumed his duties as presiding officer.

President Mount then made the following remarks:

Gentlemen, I appreciate very highly the honor you have bestowed upon me at this time. The only way

I can show you that I appreciate it is by taking up the work. For the last six or seven years I have been a member of the Council. I have seen the Society grow from an insignificant organization, where we had to borrow five hundred dollars from some member of the Council to carry on the work, to its present stage of growth, where we have a real organization which is doing something and building up an enviable position for the profession of the State. I hope that the harmony that Dr. Morse instilled during the past year of his presidency may continue and that the present good feeling among the entire profession of the state may remain.

There is one thing I want to say to you. There has been some objection to the annual dues of twenty dollars. I think a lot of that is due to the fact that we used to try to conduct the affairs of the Society for a dollar per year. We used to run in debt on the old inadequate dues. What we want to do and what we are trying to do is to give you twenty dollars worth of service. We are trying to give you this service in many ways as well as to save you money in other directions.

For instance, in the state of Washington it costs much more money for liability insurance than it does here. We are trying to keep the cost down and we have succeeded. We want you to be more careful and always on your guard against suits. I never get into a fracture case but that I begin to prepare myself for a lawsuit, because you never know when it is coming. If you are always loaded you are ahead of the game just that much; and it is a good thing to start in this year to just be ahead of the game.

Dr. Else says that we can carry our own insurance in a few years when we have built up our fund adequately. To those members who are not carrying liability insurance (Mr. Foley says that ninety per cent of the members carry insurance), I would urge that they begin to carry it for the simple reason that it is dangerous business to be without liability insurance, just as dangerous as running an automobile without insurance. I would not drive a car across the street without having insurance on it, because one never knows who is going to hit him, and the same thing applies to the present-day practice of medicine.

There has been quite some complaint, and rightly too, I think, about the State Industrial Accident work. I have served on the State Industrial Affairs Committee since its inception, with the exception of one year, and I have always felt that there should be a full-time medical man on the commission, so that the doctors might have someone who can speak their language and know how to interpret a report when it is sent in. You are sending your reports to a lay organization now and it is not the correct thing. If the commission were a legal organization, there would be a group of lawyers on it. It does not seem sound to have such a medical organization in the state without a doctor on it to devote his entire time to looking after the medical side of the work and laying down rules to be followed by the profession in taking care of accident cases. And, too, we feel that the fees of the commission which were put into effect before the war and are still in existence today, are too low; so we want to begin, as soon as we get our committee organized, to try to get the fee schedule raised and attempt to solve the other problems surrounding this side of our practice.

I thank you again, gentlemen, for the honor you have conferred upon me and I will try to make good.

Dr. Mount then appointed Drs. Wilson Johnston, W. B. Morse, L. B. Bouvy, and C. L. Booth as a Committee on Resolutions.

The business session of the society adjourned at 2:30 p.m. and the society assembled in scientific session.

THIRD SESSION

The third general business session was called to order by the president, Hugh S. Mount, at 3:30 p.m. for the purpose of hearing the report of the Committee on Resolutions.

Report of Committee on Resolutions

Dr. Wilson Johnston, chairman, read the report of the committee as follows:

Those of us who attended the session of the House of Delegates this morning must have been struck with the fact that every committee of this Society had a report. The reports were very full and indicated that a great deal of work has been done by the members of the different committees which demonstrates that there is a very great interest in the affairs of this Society. Those of you who have attended the meetings here no doubt will agree with me in saying that the scientific program has been of a very high order and that it has reflected great credit upon the men who have appeared upon it and particularly upon the officers and the members of the Committee on Scientific Work who were instrumental in organizing the program.

We feel that it is a pleasure to ask the members of this Society to extend a vote of thanks to the Commercial Club for the use of this building, entirely without charge to us, and also to the ladies, the wives of the Polk-Yamhill-Marion Counties physicians for the courtesies they have extended to the visiting ladies; also to the Polk-Yamhill-Marion Medical Society for their courtesies; and particularly to the Governor and the visiting members who have made this meeting the success it is, not forgetting to include our thanks to the outgoing officers.

Respectfully submitted,
Wilson Johnston, chairman
W. B. Morse
L. B. Bouvy
C. L. Booth

On motion duly made and seconded, it was voted that the Secretary should convey the thanks of the

Society to the persons and organizations mentioned in this report.

The business session of the society adjourned at 3:30 p.m. and the society assembled in scientific session.

OREGON PUBLIC HEALTH LEAGUE

ANNUAL MEETING, CHAMBER OF COMMERCE, SALEM, OREGON

Friday, September 2

The annual meeting of the Oregon Public Health League was called to order by the president, E. A. Sommer, at 1:45 p.m., in the Lounging Room of the Salem Chamber of Commerce.

The following officers were present: E. A. Sommer, H. J. Clements, Frederick D. Stricker, C. J. McCusker, E. B. McDaniel, Wilson Johnston, C. L. Booth, and the executive secretary. The following directors were present: William Kuykendall, C. Ulysses Moore, W. B. Morse, R. J. Pilkington, M. K. Hall, L. B. Bouvy, J. Earl Else, R. C. Coffey, and Hugh S. Mount.

The executive secretary read the following report:

The Oregon Public Health League was organized in 1920 under the name of the League for the Conservation of the Public Health. The health league idea originated in California for the purpose of arousing the intelligent groups among the laity to the necessity of protecting scientific research and scientific methods in treating disease. The aim of the organization was to align the intelligent lay people with physicians, dentists, and other health workers so that their influence might be more effectively brought to bear in legislative and other matters affecting the public health.

It was the purpose of the League organization to accomplish this desirable cooperation without taking laymen into the medical society itself. The medical society organization remained as the scientific organization of the physicians. This plan seemed expedient both from the standpoint of retaining the identity of the medical society as a technical organization, as well as from the viewpoint of appealing to the public, since the activities of the organization would not be so likely to be construed as being mere self-protecting acts on the part of the medical profession.

Prior to 1923 the Oregon Public Health League was financed by voluntary subscription and its existence was always precarious. Very often large sums were borrowed from a few loyal Portland physicians who bore the entire load of the legislative work of the profession. In 1923 the League was made a part of the State Society and a more equitable distribution of the expense of this activity was thus achieved.

In view of the dire results which have resulted from the lack of activity of medical men in public affairs, the necessity of some organization representing the physicians in a public way seems quite clear. The only debatable question is whether or not the medical society should do these things as a medical society or whether or not it should cooperate with other individuals and groups through the medium of a separate organization. The present League plan is based upon the assumption that this public activity should be handled by a separate organization.

So far as the purely political activities of the League are concerned, there can be no question but what the results achieved have been of great value. Since the organization of the League practically no legislation inimical to the profession and the public health has been enacted either by the legislature or through the initiative and referendum.

Numerous antivaccination bills and a bill requiring that prescriptions be written in English have been defeated. Attempts on the part of chiropractors to expand the scope of their powers have been thwarted from time to time, as well as various attempts to open the doors of the hospitals of the state to the various cults.

The League was also instrumental in getting the Oregon members of Congress to work for the reduction of the narcotic registration fee from $3.00 per year to $1.00 per year.

On the positive side a great deal has been accomplished to force the cults to raise their educational standards. At the last session of the legislature the League succeeded in getting provisions placed in both the naturopathy and chiropractic laws, requiring that applicants for licenses to practice chiropractic or naturopathy shall be graduates of a standardized high school or present a certificate from the State Superintendent of Public Instruction to the effect that they have had the equivalent of such instruction. This is the opening wedge to taking the licensure of the cultists out of their own hands and placing it where it properly belongs, namely, in the educational department of the state.

A basic science act was introduced at the last session of the legislature and while its passage was not secured, a great deal of valuable educational work was accomplished and the basic science idea was given much publicity with the result that the legislature will no doubt pass a basic science measure at the 1929 session.

Substantial improvements were made in the medical practice act of the state and the record of the prosecuting officer of the State Board of Medical Examiners, whose employment has been made possible by the registration fee. This indicates that Oregon will soon be freed from the several hundred quacks who have settled here in the long period of lax law enforcement. During the past three months the investigator of the State Board of Medical Examiners has made thirty-three investigations of persons practicing medicine without a license, has begun prosecution of nine cases and has won five of them, leaving four pending. Seventeen quacks have been put out of business without going through the procedure of prosecuting them. These investigations and prosecutions in the past three months cover more cases than were usually prosecuted over a period of several years under the old law when no funds were available and the law was too weak to be successfully enforced.

The League was also successful in securing the defeat of several bills in the 1927 Legislature which aimed to abolish the medical examination of male applicants for marriage licenses. This attempt was also made at the 1925 legislature and these two defeats are believed to be sufficient to settle that question for a long time to come.

The following list is a complete summary of the legislation acted upon by the 1927 Legislature:

H. B. 6. Amending osteopathic law to eliminate antiquated sections Passed.

H. B. 101. Substituting affidavit for medical examination of male applicants for marriage licenses. Defeated.

H. B. 357. Providing state aid for county health units at option of counties. Defeated.

S. B. 187. Repealing law requiring medical examination of male applicants for marriage licenses. Defeated.

S. B. 206. Raising educational requirements of chiropractors and requiring that applicants for licenses be graduates of a standardized high school or possess the equivalent of such education as determined by the Superintendent of Public Instruction. Passed.

S. B. 213. Regulating practice of naturopathy and requiring that all applicants for licenses be graduates of a standardized high school or possess the equivalent of such education as determined by the Superintendent of Public Instruction. Passed.

S. B. 222. Basic Science Act, requiring all healers to pass preliminary examination in certain basic sciences. Defeated.

S. B. 248. Amending and strengthening medical practice act. Passed.

Through the League many valuable contacts have been made with influential laymen and public officials and a card index of some 15,000 names of persons friendly to scientific medicine has been built up. Detailed information on members of the state legislature has also been compiled.

The State Medical Society through the League has also been much more active in the past few years in educating the public and as a result of the establishment of a full-time office a large volume of inquiries are now received regarding various health matters and quack remedies. An index of quackery in Oregon is now being prepared and the State Medical Society through the League will be in a much better position than ever before to protect the public by furnishing sound information on health questions.

The City Club of Portland has approved a study on the subject of unlicensed practitioners in Portland, with the executive secretary of the League as chairman. Preliminary work has already been done on this study and it is anticipated that this study will be of great value in connection with our efforts to put over a basic science act at the next session of the legislature.

In view of these results, and the prospects for continued improvement there can be no question but what the League is performing a valuable service for the medical profession of the state. The present full-time program which the State Society is now carrying on is almost entirely financed by the funds allotted to the League. There is, in fact, no place where the line can be drawn between what the Society has done and what the League has done because they have for several years been practically one and the same thing.

It is unfortunate that there has existed some difference of opinion regarding the methods by which the public activities of the medical profession should be carried on. The men who have had most experience in legislative matters are firm in their belief that it is necessary to maintain a separate organization for this purpose. A few are of the opinion that, since the work that is being done is perfectly legitimate, it can just as well be handled in the name of the Medical Society, since all members of the State Society are members of the League. After all, everyone seems to agree that it is necessary for the profession to have some regular way of presenting its views on public matters and the question or organization would therefore seem to be chiefly a quibble over words.

Upon motion duly made and seconded, it was voted that this report be accepted and filed.

Report of Treasurer

Dr. C. J. McCusker, Treasurer, read the following report:

For period March 29, 1926 to September 1, 1927.

Balance in bank March 29, 1926		$ 3,920.14
Receipts		
Received from Oregon State Medical Society		6,220.00
Received from Bulletin Advertising		130.25
Total		$10,270.39
Disbursements		
Executive Secretary, salary	$3,925.00	
Executive Secretary, miscellaneous expense	194.93	
Stenographer, salary	1,058.40	
Special Investigator, salary	133.65	
Rent	270.00	
Telephone and Telegraph	117.83	
Miscellaneous office expense	130.85	
Stationery and office supplies	366.18	
Printing	321.23	
Postage	150.86	
Legislative expense	681.20	
Subscription to Oregon Voter	11.50	
Office Furniture	33.65	
Newspaper clipping service	67.50	
Legal Service in preparing amendments to medical practice act	250.00	
Total disbursements	$7,712.78	7,712.78
Balance in bank September 1, 1927		$ 2,557.61

On motion duly made and seconded it was voted to accept this report and that the same be filed.

Election of Officers

The following were nominated for the office of director for the three year term ending in 1930:

C. J. McCusker	Portland
Ralph A. Fenton	Portland
C. Ulysses Moore	Portland

W. B. Morse	Salem
E. B. Pickel	Medford
R. J. Pilkington	Astoria

On motion duly made and seconded, it was voted that the nominations be closed and the executive secretary instructed to cast a unanimous vote for the above-named candidates. The executive secretary, as instructed, cast the unanimous vote for these candidates and they were declared elected.

The Board of Directors then went into session.

The following were nominated as officers for the ensuing year:

For the Executive Committee,

Joseph A. Pettit	Portland
Ralph A. Fenton	Portland
Wilson Johnston	Portland
Roy S. Stearns	Portland
E. B. McDaniel	Portland

For President	E. A. Sommer, Portland
For First Vice-President	C. L. Booth, Portland
For Second Vice-President	H. J. Clements, Salem
For Secretary	Frederick D. Stricker, Portland
For Treasurer	C. J. McCusker, Portland

On motion duly made and seconded, it was voted that the nominations be closed and the executive secretary instructed to cast a unanimous vote for the above-named candidates. The executive secretary, as instructed, cast a unanimous vote for these candidates and they were declared elected.

The meeting adjourned at 2:15 P. M.

MID-COLUMBIA MEDICAL SOCIETY

Pres., Marcus Thrane; Secty., J. W. Siftoh

Mid-Columbia Medical Society met November 9 at The Dalles.

Dr. Ralph Walker of Portland gave an interesting talk on X-ray Interpretation in Chest Diseases.

Dr. Thompson Coberth, The Dalles, was elected President and Dr. Grace Young, The Dalles, Secretary for the year 1928.

PORTLAND CITY AND COUNTY MEDICAL SOCIETY

Pres., O. B. Wight; Secty., R. H. Wellington

The first regular monthly meeting of Portland City and County Medical Society, East Side Commercial Club, Nov. 2, being called to order by Acting President, Dr. Otis B. Wight. The minutes of the previous meeting were read and approved.

The first paper of the evening was by Dr. R. G. Hallon, "The Use of Diathermy with Children." Emphasis was placed on the value of this agent in the treatment of pneumonia in children. The duration of both broncho- and lobar pneumonia are shortened by this therapy. The paper was discussed by Drs. C. U. Moore, Freeland and A. W. Webster.

Dr. Morris L. Bridgeman read a paper on "Mastoiditis in Children." He pointed out that many of these cases are masked by severe gastrointestinal disturbance. He described symptoms highly suggestive of pyloric stenosis and other lesions of the small intestine. Operation in many of these cases was performed after ruling out all other probable causes. The paper was discussed by Drs. Wilson Johnston, Lucas, Freeland, Karkeet, Gaston and Harrison.

A moving picture reel was shown, which demonstrated the proper and faulty posture of the human body.

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., A. J. Wanamaker; Secty., W. W. Bell

A General Meeting of King County Medical Society was held at the society's auditorium, Seattle, November 7, with President Wanamaker in the chair. Minutes of previous meeting were read and approved.

Drs. Armin Rembe and A. C. Silverberg were voted into membership of the society.

Dr. Richard Hayes, of Longview, spoke on "Intermittent Duodenal Stenosis," illustrated with lantern slides. Etiologic factors are found in periduodenal bands or membranes, mesenteric drag through mesenteric artery or the colica media, or to errors in the involuntary nervous system. Symptomatology was described, duodenal toxicity being discussed. Slides were shown of a large number of patients, with operations by leading surgeons, which disclosed no other pathology. The paper was discussed by Dr. Homer Wheelon.

Dr. W. G. Hiltner read a paper on "Amebic Dysentery." While this disease is universal in the Orient, in recent years it has been reported in all parts of this country, many having been found in and about Seattle. It is a filth disease, due to lack of sanitary provisions. The ameba histolytica was described and experiments detailed on the part of different workers, demonstrating that many persons may be carriers without exhibiting symptoms of the disease. While formerly 20 per cent of cases showed liver abscess, this has been greatly reduced in recent years. The leading role of emetine in treatment of this disease was emphasized and the method of its administration detailed. Other features of treatment were also described. With intelligent management of this disease, with cooperation of clinicians and health authorities, it is believed the disease could be eliminated and become one of the historical diseases of America, and perhaps of the world. The paper was discussed by Drs. George Dowling, H. E. Coe and J. M. Blackford.

PIERCE COUNTY MEDICAL SOCIETY

Pres., E. C. Wheeler; Secty., W. B. Penney

The regular meeting of the Pierce County Medical Society was held on the second floor of the Washington Building, Tacoma, November 8, Vice-president A. W. Howe in the chair.

PROGRAM

"Tendon Suture," by Dr. E. C. Yoder. He went into detail in regard to the technic of preparing tendons. The paper was discussed by Drs. C. R. McCreery, E. F. Dodds and G. C. R. Kunz.

"Blood Chemistry of Postoperative Cases, Especially Cases of Paralytic Ileus Following Gallbladder Operations," Dr. M. T. Nelson. The value of blood chemistry examination was stressed, especially nonprotein nitrogen, carbon dioxide and blood chloride in postoperative cases presenting symptoms of ileus. The paper was discussed by Drs. C. S. Pascoe and H. J. Whitacre.

Dr. Alice Smith made an offer in behalf of the Women's Legislative League of boxes of apples delivered to the home at $1.25 per box, one-half of the proceeds to go to the Legislative League fund for their work.

Through the courtesy of the Tacoma General Hospital and the Victor X-ray Corporation, Dr. Leverton presented a moving picture demonstrating the technic of various physiotherapy appliances.

IDAHO

IDAHO STATE MEDICAL ASSOCIATION

SUPPLEMENTARY REPORT

Financial Statement

Jan. 1, 1924 to Nov. 1, 1927

Cash Receipts:			
Balance Jan. 1, 1927		$ 1.09	
1924 Dues	$1,047.64		
Reg.	150.00	1,197.64	
1925 Dues	519.00		
Reg.	499.00	1,018.00	
1926 Dues	1,092.50		
Reg.	248.00	1,340.50	
1927 Dues	1,241.00		
Legal	458.00		
Reg.	235.50	1,934.50	$5,491.73
Expenses for 1924, 1925, 1926, 1927		5,188.94	
Outstanding Checks		64.50	
Checks listed but not run through bank	41.50		
	33.25	75.05	
Due Dr. Davis		57.50	5,491.73

Signed F. B. Johnson, (Auditor).

Report for 1927

Cash Received:		
Balance Jan. 1, 1927		$ 139.22
Deposits:		
General Fund	$1,476.50	
Legal Fund	458.00	1,934.50
		2,073.72
Expenses:		
Medical Assn.	476.00	
Stenographic Salaries	172.00	
General Expense	184.10	
Postage and Stationery	47.25	
Telephone and Telegraph	53.40	
Medical Assn. Delegate	100.00	
Public Health League Loan	250.00	
Refunds	40.00	
Meeting and Banquet	251.13	
		1,573.88
Bank Balance Nov. 1, 1927		499.84
Less Checks Outstanding		64.50
Actual Cash on Hand as of 11/1/27		435.34
Returned check on hand	250.00	

Signed F. B. Johnson, (Auditor).
J. N. Davis, M.D., Sec.-Treas

IDAHO FALLS MEDICAL SOCIETY

Pres., H. L. Willson; Secty., J. W. West

The Idaho Falls Medical Society and the Clinical Staff of the L. D. S. Hospital held a joint meeting at Idaho Falls Nov. 4.

Dr. George W. Middleton of Salt Lake City gave a very interesting and illuminating lecture on the history, anatomy, pathology and medical treatment, and especially the surgical treatment, of the thyroid gland.

Mrs. Clara Albion Harrison, instructor of singing at Idaho Falls, gave two very choice arias.

SOUTHWESTERN IDAHO MEDICAL SOCIETY

Pres., F. B. Brewer; Secty., A. B. Boeck

Southwestern Idaho Medical Society held its semi-annual meeting at Boise Oct. 26, under the presidency of Dr. F. B. Brewer. The morning program was devoted to clinics at the various hospitals. At the afternoon meeting, the society was addressed by Dr. T. Homer Coffen, Portland, Ore., Dr. Alan Hart, Spokane, Wash., Dr. Geo. O. A. Kellogg of Nampa and Dr. Lawrence R. Quilliam of the staff of the United States Veterans' Hospital, Boise.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

A Text-Book of Therapeutics. Including the Essentials of Pharmacology and Materia Medica. By Arthur A. Stevens, M.D., Professor of Applied Therapeutics in the University of Pennsylvania. Seventh Edition, Entirely Reset. Octavo of 758 pages. Philadelphia and London: W. B. Saunders Company, 1927. Cloth, $6.50 net.

Stevens' textbook on therapeutics is an extraordinarily good treatise. While its pharmacology is not extensive as in Cushny's classical work, where the reader was lead through the physiologic actions of the drug on the organs of animals, yet for all practical purposes the actions are summarized so that they are more easily grasped by the average man in the profession. Cushny's work was more like a study in physiology and one's reasoning powers were trained by following the ingenious experiments and the logical deductions that followed from them. In this book the author adheres to the plan of Hare in his Practical Therapeutics but not his alphabetical classification. Each drug is described under three headings; materia medica, pharmacology and therapeutics, and the latter part of the work is devoted to an epitomized treatment of specific diseases.

Stevens is a master of epitome. His Manual of Practice of Medicine proved that, and it has gone through heaven knows how many editions. And, after all, summarizing and winnowing out the wheat from the chaff is what everyone does in listening to a medical address or reading an article. The ability to determine just what are the essentials of a matter constitutes real genius. This was what Osler possessed, besides his great gift of literary style and expression.

Many of the newer drugs and remedial measures appear in this volume for the first time, as ephedrine, sulpharsvhenamine, tryparsamide, insulin, novasurol, gentian violet, scarlet fever toxin and antitoxin, erisipelas antitoxin, diathermy, transfusion of blood, and heliotherapy, besides many others.

Of course, the only important objection to a work devoted chiefly to the essentials of a subject is the necessity of omitting comparatively nonessentials. But at times these become extremely consequential in respect to a particular case, so that a very able oculist used to advise always buying the largest volume possible on a medical subject because it might contain something not to be found in a smaller book. It is to be feared that most of us would not find the precious item among the welter of words and Stevens has to be congratulated not only on his ability to emphasize the essentials of his topic but to express himself in a concise manner.

When one comes to the latter section of the book, devoted exclusively to abbreviated treatment of the more common specific diseases, he is struck by the broad common sense of his therapeutics. This is shown to no better advantage, for instance, than in the comments on the care of such common disorders as chronic cholecystitis and essential hypertension. There is no more generally sensible, practical and up-to-date treatise on therapeutics than this latest edition of Stevens' work. WINSLOW.

A TREATISE ON ORTHOPEDIC SURGERY. By Royal Whitman, M.D., M.R.C.S., F.A.C.S. Surgeon to the Hospital for the Ruptured and Crippled, New York, etc. Eighth Edition, Thoroughly Revised. Illustrated with 954 Engravings. 1061 pp. $9.00. Lea & Febiger, Philadelphia, 1927.

This edition has been thoroughly revised and brought up to date in every particular. The entire field of orthopedic surgery is wonderfully well covered. The first edition represented the best work of the kind at its publication, and this edition stands supreme among the works on orthopedic surgery. The various reconstruction operations on the hip are profusely illustrated and described in minute detail. The Whitman treatment for fracture of the neck of the femur is elaborately illustrated and described. If every practitioner were to read this chapter a couple of times yearly, there would probably be fewer bad results from this common and much abused fracture. The book should occupy a prominent place in every physician's library. EIKENBARY.

SURGERY, ITS PRINCIPLES AND PRACTICE. For Students and Practitioners. By Astley Paston Cooper Ashhurst, A.B., M.D., F.A.C.S. Professor of Clinical Surgery in the University of Pennsylvania, etc. Third Edition. Thoroughly Revised. With 15 Colored Plates and 1046 Illustrations in the Text mostly original. 1179 pp. $10.00. Lea & Febiger, Philadelphia, 1927.

It is a genuine accomplishment to compress in one volume such material as will furnish the foundation on which a knowledge of surgery is to be built. The present volume is a tribute to the author's success in that accomplishment. A thorough revision is apparent and many of the author's colleagues have contributed thereto. Although the volume has been lessened in size, the number of illustrations have been increased and much new matter has been introduced. Sections on alkalosis, tularemia, paravertebral and synergistic anesthesia, sarcoma of bone, treatment of hydrocephalus, chronic dilatation of the duodenum, visceroptosis, congenital anomalies of rotation and fixation of the intestines are presented mostly as new matter. The popularity of the work should be increased by this presentation. FORBES.

THE PRINCIPLES OF SANITATION. A Practical Handbook for Public Health Workers. By C. H. Kibbey, Director of Sanitation, Tennessee Coal, Iron and Railroad Company, Birmingham, Ala., etc. With 34 illustrations, including 5 color plates. 354 pp. $3.50. F. A. Davis Co. Philadelphia. 1927.

This book has been written primarily for sanitary inspectors throughout the country, laymen, none of whom have been trained as sanitarians. Social workers and public health nurses will also find matters of interest in these pages. An effort is especially made to convey knowledge of infective agents, with their means of transmission and preventive measures. After general considerations, chapters are devoted to each of the infectious diseases with a brief description of each, their methods of control and prevention. Instructive chapters appear on disposal of waste products, water, milk, immunity and fly control, all of which will come under consideration of sanitarians in all sections of the country. This book contains much information for those engaged in this line of work.

CLINICAL DIAGNOSIS BY LABORATORY METHODS. A working Manual of Clinical Pathology. By James Campbell Todd, Ph.B., M.D., Professor of Clinical Pathology, University of Colorado, and Arthur H. Sanford, M.D., Professor of Clinical Pathology, University of Minnesota (The Mayo Foundation) etc. Sixth Edition, Revised and Reset. Octavo of 748 pp. with 346 illustrations, 29 in colors. Philadelphia and London. W. B. Saunders Company, 1927. Cloth, $6.00 net.

Due to Dr. Todd's ill health, he has had Dr. Arthur H. Sanford join him as co-author and in the foreward says, "we are now equally responsible for the book." The colored illustrations, particularly of the blood, are quite satisfactory in reproducing the colors of Wright's stain. The chapter on the blood is by far the largest of the book. With the chemical examination of the blood gradually becoming of greater importance it is necessary that simple methods of procedure are given. This is done throughout the book. Space is given to most of the late laboratory methods. MOSIMAN.

OPHTHALMOSCOPY, RETINOSCOPY AND REFRACTION. By W. A. Fisher, M.D., F.A.C.S., Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College, etc. Second revised and enlarged edition. 260 illustrations and 48 colored plates. 283 pp. $3.75. Philadelphia, F. A. Davis Company, 1927.

This book has been written especially for the general practitioner and student. The author has succeeded in his intention to make difficult subjects easily accessible to them. An ingeniously designed schematic eye, made out of a spool is described.

With its help the dreaded study of opthalmoscopy is made simple, easy and interesting. Ophthalmoscopy should be mastered first on this schematic eye before examining a living fundus.

A concise and clear text, omitting confusing details for the novice, is supplemented by colored plates of the normal and most important pathologic fundi. Tests of the field of vision, retinoscopy and refraction are also well explained. Everywhere the experienced teacher is noticeable.

A new chapter is added to this edition on the newer methods of refinement in ophthalmic diagnosis by Von Der Heydt, which includes the red-free light of Vogt, the Gullstrand binocular opthalmoscope and microscopy of the living eye with slit-lamp illumination. In a short and clear way the author tries to acquaint and interest the reader with these newer methods. KLEMPTNER.

AFFECTIONS OF THE STOMACH. By Burrill B. Crohn, M.D., Associate Attending Physician to the Mt. Sinai Hospital, New York City. Octavo of 902 pages with 361 illustrations, some in colors. Philadelphia and London: W. B. Saunders Company, 1927. Cloth, $10.00 net.

It is not often that two large textbooks on the stomach are published at the same time. Last month we had the privilege of noticing one of them; the present volume is the other. We were very favorably impressed in beginning this work and the more we read the better we liked it. Ulcers of the stomach and duodenum are treated together as gastroduodenal. This at first sight seems unfortunate as confusing the diagnosis. prognosis and treatment, which are not by any means similar for both classes of ulcer. However, Crohn manages quite well and points out the differences as he proceeds. Of the importance of focal infections he is most emphatic and gives Rosenow rightly great credit in this matter. His insistence on careful physical examination to determine the presence of focal infections, heart or lung disease, other abdominal disorders, and especially to eliminate syphilis, is particularly laudable in a gastrologist. Among symptoms of ulcer he attributes more than usual import to the existence of a tender point in the epigastrium. As a diagnostic point, distinguishing duodenal from gastric ulcer, Crohn places first that of Moynihan, i.e., in gastric ulcer, food relief, pain relief. In duodenal ulcer after food there are relief and then pain until the next meal.

But it is in the handling of gastric manifestations of reflex origin that the author shows a wide clinical conception of his subject. Heretofore the gastrologist has seen little but stomach and appeared to conceive patients as little more than gastropods. Gallbladder disease and chronic appendicitis are of course the chief source of reflex gastric symptoms. Crohn quotes Blackford and Dwyer extensively as to the frequency of gallbladder disease among all digestive disorders but not their most recent findings that gallbladder troubles exceed in frequency peptic ulcer, gatsric cancer and chronic appendicitis put together.

Crohn finds no value in the Lyon method for diagnosis or treatment of gallbladder disease and, although advising a fat-free diet and Carlsbad salt treatment, adds that "sooner or later practically all gallbladder patients become subjects for cholecystectomy, and surgical removal is better done early than late." The avoidance of fatty food is prescribed on the basis that fat leads to cholesterin formation (Hurst). This seems paradoxical, when we know that nothing so empties the gallbladder as a fatty meal and drainage is what we want. The fact probably is that the avoidance of fat is essential to prevent pain from gallbladder contractions and not to avert cholesterin production. Crohn gives us a sensible and scientific presentation of gallbladder disease and, while absolutely up to date, does not waste the reader's time by interminable pages on the newer liver function tests which we criticized in the other book on stomach diseases because the clinical value of these is yet uncertain. His chapter on gastric symptoms of myocardial and coronary disease is excellent because these are common and are so frequently confused with gallbladder and gastric disorders.

This opens up the important question of how far are gastrologists justified in infringing on the domain of internal medicine in textbooks on the stomach. William Mayo some fifteen years ago tersely divided stomach troubles into the organic, ulcer and cancer, 10 per cent; reflex, from other abdominal diseases, as gallbladder, appendicitis, ovarian disease, etc., 20 per cent. The remaining 70 per cent were divided about equally between the neuroses, including enteroptosis (36 per cent), and gastric disturbances symptomatic of a host of other diseases (tuberculosis, syphilis. etc.). How far, then, should the gastrologist with his awakened consciousness, after fifteen years of hibernation, that stomach troubles are not stomach troubles at all, venture forth into the field of internal medicine?

Should he give us pages and chapters on stomach symptoms seen in all diseases from A to Z, or only discuss those commonly mistaken for gastric entities. This latter conception would seem to be the proper attitude but even here there must be a great margin of difference in the opinion of different writers. In the present volume the author has pursued a pretty sane course, although his analysis of gastric neuroses in part on the detestable freudian psychology is an unpleasant modern innovation. The preliminary part of the book, relating to physiology, pathology, chemical tests, methods of examination and roentgenology, is commendable. While it would seem to the reviewer that all facts on the stomach, apart from the domain of internal medicine, should be completely encompassed in a work of 500 pages, yet in his opinion, Crohn's book is the most admirable, complete and practical exposition of affections of the stomach we have in English today.

WINSLOW.

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A Text-Book of History Arranged Upon an Embryological Basis. By Dr. Frederick T. Lewis, Associate Professor of Embryology at the Harvard Medical School, and Dr. J. L. Bremer, Associate Professor of Histology at the Harvard Medical School. This is a revision of the second edition of Lewis and Stohr's textbook of Histology, based on the fifteenth German edition of Stohr's Histology. 485 illustrations of which 32 are in color, 557 pp. P. Blakiston's Son & Co., Philadelphia, 1927.

As a general reference book of histology this volume stands among the first, because good illustrations have been added on nearly every subject, and, where the correlation is of value, many diagrams have been added. On page 141 is an excellent diagram of a nerve cell, while page 206 gives a beautiful picture of bone marrow. These are suggestive of many other clear and instructive illustrations. Part I., Microscopic Anatomy, deals with cytology, general histology and special histology, while Part II. considers microscopic technic. The student and physician will find in this volume complete information on the subject of histology. Mosiman.

The Normal Diet, a Simple Statement of the Fundamental Principles of Diet for the Mutual Use of Physician and Patients. By W. D. Sansum, M.S., M.D., F.A.C.P., Director of the Potter Metabolic Clinic, Santa Barbara Cottage Hospital. Second Edition, 136 pp. $1.50. The C. V. Mosby Company, St. Louis. 1927.

The author believes that a simple statement of fundamental principles underlying a normal diet may fill a definite need. A normal diet should contain an adequate amount of bulky residue-containing foods; of alkine-ash foods; of starches and sugars to prevent the acetone type of acidosis; of food units, or calories, to maintain normal weight; of protein; of mineral-containing foods; of the vitamines and of fluids. A chapter is devoted to each of these eight topics which present many suggestions of value.

Surgical Diseases of the Gall-Bladder, Liver and Pancreas and their Treatment. By Moses Behrend, A.M., M.D., F.A.C.S. Attending Surgeon to the Jewish and Mt. Sinai and Northern Liberties Hospitals, Philadelphia, etc. With Numerous Illustrations, Some in Colors, Including Many Full Page Plates. 278 pp. $4.00. F. A. Davis Co., Philadelphia, 1927.

The author states that his reason for writing this book was to provide in accessible form the material of recent articles published on the gallbladder and its passage-ways. By adding much new matter and by rearrangement, he has increased its value greatly. The chapter on anatomy of the liver and biliary apparatus and pancreas provides numerous excellent illustrations of the variations in this region. Other chapters on symptoms, diagnosis and cholecystography give a modern interpretation of our understanding along these lines. As a special work on diseases of the gallbladder it is to be highly commended. Forbes.

Practical Bacteriology, Blood Work and Animal Parasitology. Including Bacteriological Keys, Zoological Tables and Explanatory Clinical Notes. A Compendium for Internists. By E. R. Stitt, A.B., Ph.G., M.D., Sc.D., LL.D., Rear Admiral, Medical Corps, and Surgeon General U. S. Navy, etc. Eighth Edition Revised and Enlarged. With 1 Plate and 211 Ostil Illustrations Containing 683 figures. 837 pp. $6.00. P. Blakiston's Son & Co., Philadelphia, 1927.

This work has grown from a hand book to a volume of reference for surgeon as well as internist and its growth has been parallel to the advance made in clinical pathology. The volume is not padded with questionable material but each subject is handled in a thorough and concise manner. Instructions for the doing of laboratory tests are given in a manner so that the steps can easily be followed even by those who are only occasionally called upon to perform them. The indexing and the arrangement of the chapters are most satisfactory. It is a volume which few can afford to be without. Mosiman.

The Surgical Clinics of North America. (Issued serially, one number every other month.) Volume 7, Number 4 (Brooklyn Hospital Number—August, 1927). 311 pages with 168 illustrations. Per clinic year (February 1927 to December 1927). Paper, $12.00; Cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company.

The foreword of this volume states that it intends to represent a cross-section of some of the problems and activities of divisions of a department of surgery of a general hospital in a large city. The ordinary cases of gastric and duodenal ulcer, biliary disease, appendicitis, empyema, goiter, etc., are not stressed, as is common in the usual volumes of this series, but more attention is paid to unusual conditions. A number of such are exhibited in the discussion of ureterocele, neoplasms of the ileocecal valve, primary lymphosarcoma of the spleen, sarcoma of the intraabdominal testicle. This suggests some of the things presented in this volume, there being many others of equal interest.

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Studies in Human Inheritance. The medicolegal application of hereditary human characters in cases of disputed parentage, with especial reference to the blood groups, is discussed by Laurence H. Snyder, Raleigh, N. C. (Journal A. M. A., Feb. 19, 1927). The blood groups, which have received most publicity as medicolegal aids, present a case in point. It has been shown that the blood groups are probably not inherited as two independent pairs of factors, but as a series of three multiple allelomorphs. This changes to some extent the medicolegal application of the groups. It does not invalidate any previous test, but makes the application even more strict. It limits the groups of the remaining parent to a smaller number of possibilities in cases in which a parent of group IV is involved. Only in such cases involving a parent of group IV is any change made. A table is given, showing all possible cases in which the blood group test can be used. In addition to the blood groups, other simple factors may be used in determining parentage. Eye color is one of these. Blue eyes are recessive to dark eyes (brown or black). Blue eyed parents always have blue eyed children.

Investigation of Injuries From Hair Dyes, Dyed Furs and Cosmetics. On the recommendation of the Section on Dermatology and Syphilology, the House of Delegates, in May, 1924, adopted a resolution calling for action to safeguard the public against injuries from dyed furs, hair dyes and cosmetics, and authorized the Board of Trustees to seek legislation if necessary to accomplish that end. The chairman of the section appointed a committee to cooperate with the Bureau of Legal Medicine and Legislation in carrying that resolution into effect. Harold N. Cole, Cleveland (Journal A. M. A., Feb. 5, 1927), chairman of the committee, makes the following report: There were 437 questionnaires distributed, and thus far only sixty-two have been returned. There were 144 cases reported in the sixty-two questionnaires returned from the physicians, and thirty-three additional ones reported by persons reading syndicated articles. One hundred and eleven reports of injuries from hair dyes were received. Paraphenylendiamine is present in at least nineteen of the forty-one hair dyes reported and probably in another, to say nothing of its being present in nine so-called "henna" cases.

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Wanted—By a physician doing considerable surgery, a young doctor inclined to internal medicine and laboratory work, to locate in up-to-date, progressive city of 3500, to form working partnership (only). Good general field, outside of my help. City is now lively, and expect to have a population of 5000 in two years. Within sixty miles of Portland, Ore. Am holding office rooms. Address S, care Northwest Medicine.

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Position as assistant to oto-laryngologist with established practice, Coast city, Washington, preferred, by a physician, 39 years of age, graduate Class A school, 1917. Have had three years neuropsychiatric training in eastern hospitals, four years practice. Good personality, energetic, persevering. Locum tenens considered. Address F, Care Northwest Medicine.

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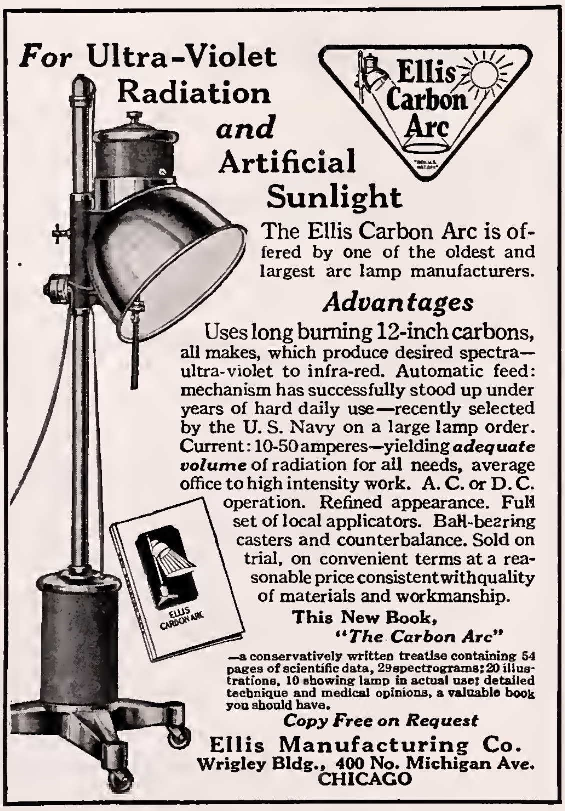
BIRDS OF A FEATHER

On September 22 and 23, according to an announcement just issued, the second annual convention of the Koch Cancer Foundation will take place in Chicago, one of the meetings being a joint session with the American Association for Medico-Physical Research. No doubt Chicago merits this visitation as a return for its sins. In 1925, The Journal spoke briefly relative to the American Association for Medico-Physical Research, a society organized in 1911 by the outstanding quack of the century, Albert Abrams. The organization was an outgrowth of the American Association for Spondylotherapy, the term "spondylo" referring to the spine and not to the good old American word "spondulix." In this peculiar organization are assembled some of the conspicuous exploiters of borderline medicine in this benighted land. For example, in 1925 the chairman of the section on radiology was Mr. George S. Foden, a practitioner of electronic medicine, who read a paper on "The Eye as an Index Factor to Personality;" osteopath Francis A. Cave, an honorary vice-president of the Medical Liberty League, also devoted himself to electronic practice; William Howard Hay, chairman of the section on advanced medicine, had a diabetic cure and one for hay-fever; A. C. Geyser is a promoter of the "tricho system;" George E. Harter is the founder and director of the Defensive Diet League; E. M. Perdue has a cancer cure. And then there is Koch—William F. Koch, M. D., Detroit, Michigan—inventor of the Koch synthetic antitoxin for the cure of cancer. According to his bulletin, some three hundred physicians will gather to discuss the use of the Koch remedy in cancer. But one meeting is to be a point meeting with the distinguished members of the American Association for Medico-Physical research. The Koch representatives should add tone to this remarkable assemblage.—Jour. A. M. A., July 23, 1927.



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QUACK HAIR SPECIALIST ANALYZES TWINE, FUR

"The public of today demands finesse in being gypped and quacks rise to the occasion," observes Dr. Arthur J. Cramp, director of the bureau of investigation of the American Medical Association, writing in *Hygeia* for October.

Dr. Cramp recounts his investigation of the Professor Scholder Institute of New York, which professes to diagnose hair health from a microscopic examination of specimens of hair.

As a starter Dr. Cramp sent in three specimens for analysis each from a different address. One specimen was from a woman's coat cuff of the fur known as platinum fox; another was from a collar of so-called wolf (Siberian or Japanese dog), while the third was from the healthy head of a young woman whose hair reached below her waist. The diagnosis in each case read:

"I have analyzed the specimen of hair you sent me. A microscopic examination discloses that the roots are in a seriously undernourished condition. You are in grave danger of continuous and increasing loss of your hair, but it can still be saved by prompt treatment."

Professor Scholder then consented to take charge of the case, promising that his treatment if faithfully followed would restore the hair and scalp to a normal condition.

Wishing to test whether the professor really knew a hair when saw it, the doctor sent to the marvelous diagnostician, from two more addresses, some unraveled filaments of heavy twine. Again came back the stock letters declaring that the roots were in a seriously undernourished condition!

"The advertisments say that 'the newspapers in this country and abroad have proclaimed Professor Scholder as the marvel of his profession.' They should. Any one who on a basis of a microscopic examination of a piece of twine can diagnose the hair health of a person he has never been may rightly be called a marvel," comments Dr. Cramp.

NOBODY KNOWS FULLY WHY OUR TEETH DECAY

"What makes our teeth decay?"

Volumes have been written in attempts to answer this question, but still the dentist is able to reply only in part, says Dr. W. A. Kerrison in *Hygeia*.

The immediate cause of decay is of course the action of acids formed by bacteria in contact with certain substances. But this action is modified by so many factors that each mouth presents a separate problem.

Diet has its influence. The assimilation of the calcium necessary to form good teeth depends in turn on the presence of phosphorous, the vitamins and other conditions.

Dr. Kerrison shows how a certain strain of bacteria, a single element in the saliva, an alteration in the blood cells or the perversion of nervous irritability may spell the difference between a mouth diseased with caries or pyorrhea and one in perfect condition.

No dentist can determine the basic cause of any disease of the mouth without careful examination of his patient's habits and history. If the condition is complex and discouraging, the patient should consult both dentist and physician, Dr. Kerrison advises.

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"When I was a boy a hospital was considered a place to which they sent people for operations or when they were about to die," says Dr. George B. Lake, who describes a hospital as preeminently a place to get well, in *Hygeia* for November.

Dr. Lake tells of the fascinating "nervous system" of a new hospital, the intricate electric wiring that makes the institution work with soundless efficiency and a minimum of discomfort for the patient.

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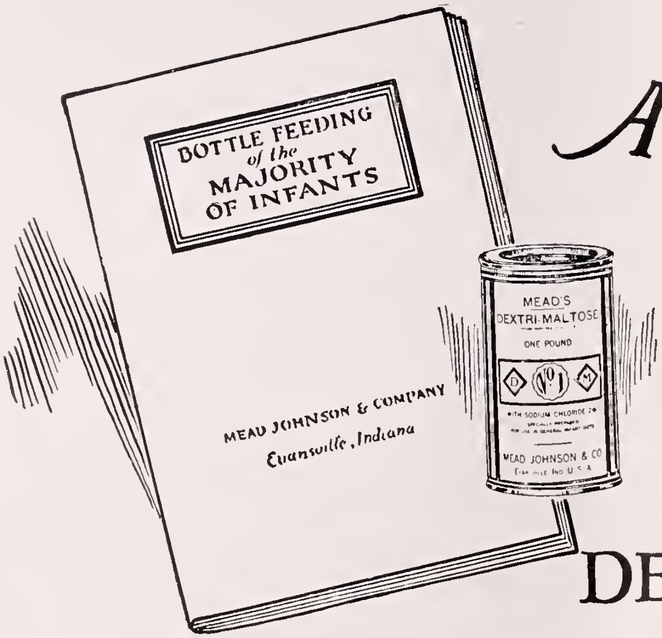

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It gives me great pleasure to extend this information to you, and also to grant you full authority to use it as you may see fit. I feel that the manufacturers of this instrument are to be highly complimented for manufacturing a piece of apparatus as efficient as the "Monex" seems to be, and at the same time as free from sporadic high frequency oscillations.

This test was witnessed by Mr. J. R. Ferris and Dr. F. H. Dammasch, both newly elected directors of the Broadcast Listeners' Association.

Cordially yours,

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The correction of fermentative diarrhoea is accomplished by the control of the bacterial activity in the intestines which produces the disturbance.

A rational way to combat the excess activity of acid-forming bacteria is temporarily to reduce the carbohydrate and increase the amount of protein in the feeding. This may be done by adding Casec to diluted cow's milk. The administration of this mixture usually produces less frequent stools and of a paste-like consistency within one or two days.

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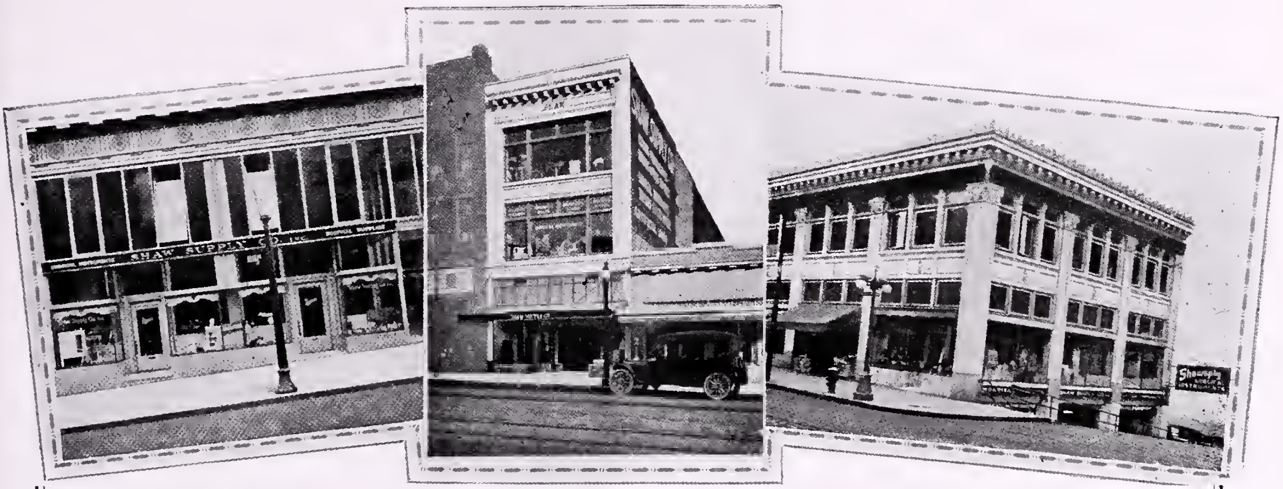
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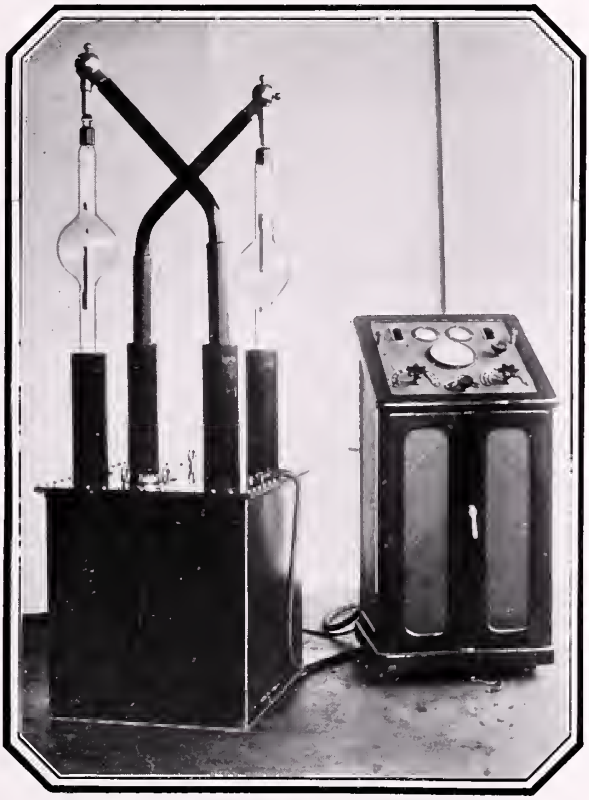

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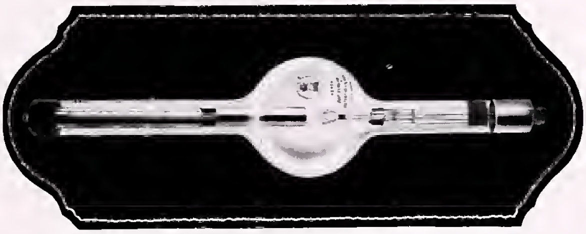

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IMPORTANT INFORMATION

For Every Surgeon and X-Ray Man

Report on German Radiological Congress

27th-30th April, 1927

PRELIMINARY

This year the Congress was held in conjunction with the Annual Meeting of the Society of Internal Medicine at Wiesbaden. The medical section was timed to commence a few days before the Radiological Meeting. Every facility was placed at the disposal of the two Societies by the Town authorities. The principal building, the Kurhaus, was set aside for the Radiological Exhibition and General Meetings, both radiological and medical.

The total attendance reached the figure of 6,000, of which approximately not less than 600 were X-ray specialists interested only in the Roentgen Congress. It is of peculiar interest to note the heavy proportion of radiologists in comparison with medical practitioners.

There seems to be some doubt as to the total number of X-ray workers in Germany, and figures given in answer to several enquiries varied between 2,000 and 5,000. It appears that in Germany there are a large number of medical workers who use X-ray apparatus to a limited extent, but do not consider themselves radiological specialists. At the same time, even if the figures were taken as 3,500 to 4,000, the attendance of 600 indicates a very healthy interest in this branch of medicine. In the same way, the apparent precedence given to the radiological exhibit is worthy of note. . . . . .

RADIOLOGICAL EXHIBITION

The total number of exhibits was twenty-one, of which twelve were manufacturers of X-ray apparatus, three manufacturers of X-ray tubes only, two were dealers in Photographic Accessories and the remainder exhibited Ultra-Violet Lamps and subsidiary apparatus such as special measuring instruments and the like. The stands were spacious and well built. No attempt was made to erect enclosed stands and in all cases decoration was reduced to a minimum. Each exhibit was served by more than a sufficiency of attendants.

GENERAL IMPRESSIONS

Complete absence of mechanical High Tension rectification.

Without exception, every manufacturer gave particular prominence to Valve Rectifying High Tension Equipment. Only two mechanically rectified units were seen; both in the background of Koch and Sterzel Sanitas stands. The valve sets varied in principle from half-wave rectification using one valve to the full wave three phase system employing six valves. Undoubtedly, the most popular unit was the one in which four low power valves are utilized for full wave rectification; the output on the average being quoted at 70 to 100 milliamperes at 90 to 100 K. V., R. M. S.

—Reprinted from the British Journal of Radiology, July, 1927.

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X-RAYS UP TO DATE

* * * * * * *

Boise in Forefront of Scientific Progress

Little accidents sometimes lead to big discoveries.

A Boise family man bruised his index finger while using the family rolling pin to crush some ice for the family cream freezer. The digit being virtually his sole means of support, inasmuch as he pounds a typewriter by the H. & P. system, he sought the aid of a medical man "right now."

Time was when a doctor would have pressed and prodded an injured member of the kind and made a wild guess. This one said, "Let's have a look." He ushered the sufferer into a small room where a shiny new machine stood expectantly. Part of it looked like a radio receiving set, and the rest like a gym rubbing table.

IN A JIFFY

The offending finger was placed on a tiny placque in the center of the table, a gently buzzing lamp was trained on it for three seconds, and the the placque was removed and put in a tank of chemicals. It was a kodak film. A moment later it came out, a perfect picture of an almost perfect finger bone.

X-rays are not new, to Boise nor to the owner of the finger. But even a layman could recognize something radically new in this machine, just as a mere pedestrian knows whether he is dodging a 1902 flivver with a crank below the radiator, or an eight-in-line, 122-inch wheelbase sedan of today.

GENERATION OF PROGRESS

Twenty years ago an X-ray machine was as noisy and as fatiguing to the operator as a corn sheller—and scared the patient out of his wits. Improvements came, but there was always a terrifying spark like a baby lightning bolt, a grinding motor, and an atmosphere of impending doom. A few minutes in the room made people actually sick, for the machine ate up ozone.

Remarks to this effect were made by the man-with-the-finger. And maybe you think he didn't feel smart when he was told that he had hit the nail on the head. This was a brand-new machine. The offending finger was the first subject to pose for a picture by a process new in the intermountain country to a revolutionary degree. The installation of this new machine was but now being completed.

BOISE UP-TO-MINUTE

It not only raises the Eastman building a notch higher as a typical doctors' and dentists' headquarters, but it brings to Boise the latest word in fluoroscopy and radiography, as far in advance of installations heralded here two years ago, as the Spirit of St. Louis is ahead of the original Wright Brothers' glider.

Valve-tube rectification, on the same principle as that used in radio reception, does the trick. It eliminates the horrible noise and the vitiated air. Other mechanical refinements change the whole outfit so radically that instead of suggesting the electric chair at Sing Sing it induces faith and rest in the patient.

Thus a plug citizen, so far behind the march of progress that he has no electric refrigeration in his home, is the first to shake hands with the ultimate in Boise's advancement in surgical science.

Reprinted from Boise Capital News, August 4, 1927

The inspiration for the above was a new WAPPLER-MONEX outfit just installed in the office of Dr. T. W. Almond, Boise.

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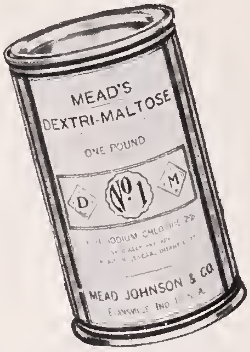

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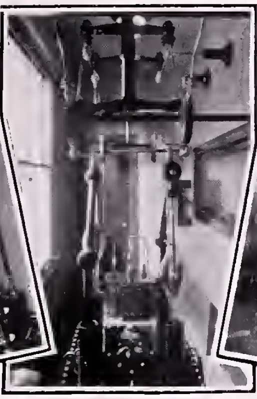

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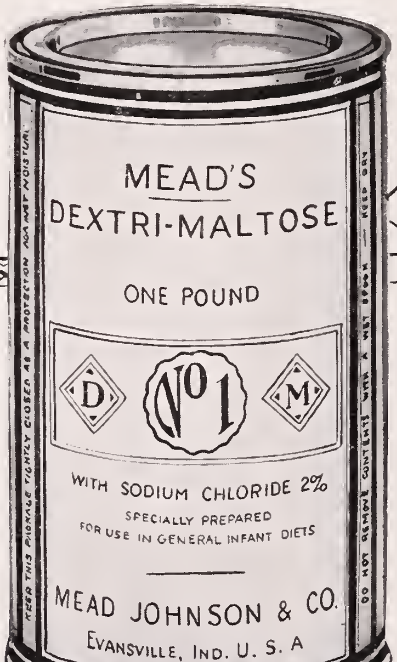
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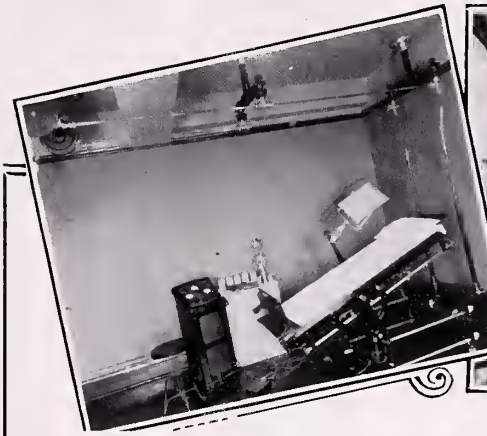

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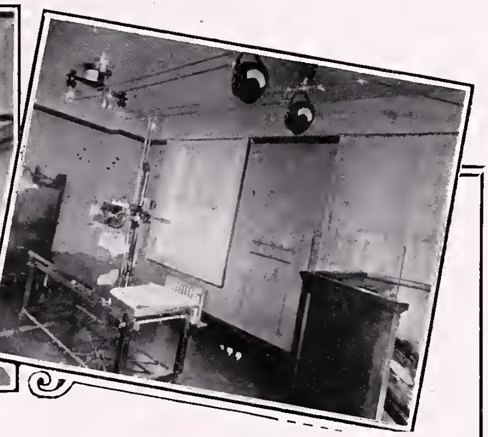

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